



May 19, 2022

Melanie A. Bachman  
Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

Re: Tower Share Application - Dish Site 13729960  
Dish Wireless Telecommunications Facility @ 164 County Road, Wolcott, CT 06716

Dear Ms. Bachman,

Enclosed please find three (3) sets of Tower Share application packages for the above referenced site and filing a fee check in the amount of Six Hundred Twenty Five Dollars (\$625.00).

Note that my effort to mail the required notice package to property owner was unsuccessful. Three (3) copies of the undelivered "return to sender" envelope, the notice letter and a copy of the GIS map identifying the parcel are enclosed. Copies of another GIS map and property data are likewise enclosed as part of this submission package.

A pdf copy of these same documents has been emailed to your office this day. As always, if you have any questions or comments, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a circular stamp or watermark.

Jack Andrews  
Zoning Manager, Centerline Communications  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144

Enclosures: Tower Share Application Letter  
Exhibit 1 - Letter of Authorization from tower owner  
Exhibit 2 - Property Card, GIS Map & Prior CSC D&O  
Exhibit 3 - Construction Drawings  
Exhibit 4 - Structural Analysis Report  
Exhibit 5 - Antenna Mount Analysis Report  
Exhibit 6 - EME Study Report  
Exhibit 7 - Notice Confirmations



May 4, 2022

Melanie A. Bachman  
Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

Re: Tower Share Application – Dish Site 13729960  
Dish Wireless Telecommunications Facility @ 164 County Road, Wolcott, CT 06716

Dear Ms. Bachman,

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing three hundred forty seven (347) foot tall guyed tower at 164 County Road, Wolcott, CT. (Latitude: 41.57621876, Longitude: -72.95606903) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by Insite Towers LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a two hundred twenty three (223) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 347-foot and no changes will be made to the compound dimensions.

I cannot locate the original tower approval. Most recently, the Council approved an exempt modification in case number EM-SPRINT-166-140627.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish's intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: American Tower Corporation as Tower Operator/Owner; Insite Towers LLC, as Property Owner; the Honorable Thomas G. Dunn, Mayor of Wolcott, and David Kalinowski, Wolcott Zoning Inspector.

The applicant's proposal falls squarely within those activities explicitly provided for in R.C.S.A. §16-50j-89. Specifically:

1. The proposed modifications will NOT result in an increase in the height of the existing structure.
2. The proposed modifications will NOT require an extension of the site boundary.
3. The proposed modifications will NOT increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.



4. The operation of the modified facility will NOT increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Please see the RF emissions calculation for DISH's modified facility enclosed herewith.

5. The proposed modifications will NOT cause an ineligible change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading. Please see the structural analysis enclosed herewith.

Connecticut General Statute 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish respectfully indicates that the shared use of this facility satisfies these criteria:

A. **Technical Feasibility.** The existing tower has been deemed structurally capable of supporting Dish's proposed loading (see attached Structural Analysis).

B. **Legal Feasibility.** As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit for the proposed installation. Further, a Letter of Authorization is attached, authorizing Dish to file this application for shared use.

C. **Environmental Feasibility.** The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish equipment on the tower will have an insignificant visual impact on the area around the tower. Dish ground equipment would be installed within the existing facility compound. The Dish shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by the attached EME study, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. **Economic Feasibility.** Dish will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish with this tower sharing application.

E. **Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting the proposed loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish's intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through the area.



For the foregoing reasons, Dish respectfully requests that the Council approve this request for the shared use of this tower located at 164 County Road, Wolcott, CT 06716.

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a circular blue stamp or seal.

Jack Andrews  
Zoning Manager, Centerline Communications  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144

Enclosures: Exhibit 1 – Letter of Authorization from tower owner  
Exhibit 2 – Property Card and GIS  
Exhibit 3 – Construction Drawings  
Exhibit 4 – Structural Analysis Report  
Exhibit 5 – Antenna Mount Analysis Report  
Exhibit 6 – EME Study Report  
Exhibit 7 – (4) Notice Confirmations

cc: American Tower Corporation - Tower Operator/Owner  
Insite Towers LLC - Property Owner  
The Honorable Thomas G. Dunn - Mayor of Wolcott  
David Kalinowski - Wolcott Zoning Inspector



## LETTER OF AUTHORIZATION

**SITE NO:** See Site List Below

**SITE NAME:** See Site List Below

**ADDRESS:** See Site List Below

I, Margaret Robinson, Senior Counsel, US Tower Division on behalf of American Tower\*, owner and/or operator of the tower facilities located at the addresses identified below (the "Tower Facilities"), do hereby authorize Centerline Communications, LLC ("Centerline"), its agents, successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment owned and operated by DISH Network on the Tower Facilities located at the addresses identified below. This installation shall not affect adjoining lands and will occur only within the areas leased or owned by American Tower.

American Tower understands that the applications may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installations. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit Centerline to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installations of telecommunications equipment without the prior written approval of American Tower.

Site Authorized:

ATC PROJECT#	ATC SITE#	DISH SITE#	ADDRESS
13683503	302472	BOBDL00010A	104 Bunker Hill Road, Andover, Connecticut
13701209	302470	BOHVN00141A	401 Wakelee Ave, Ansonia, Connecticut
13702524	370641	BOHVN00148A	401-411 Lopus Road, Beacon Falls, Connecticut
13709244	88008	BOHVN00151A	9 Meyers Road, Bethany, Connecticut
13694329	283419	BOHVN00136A	123 Pine Orchard Road, Branford, Connecticut
13694332	283422	BOHVN00137A	171 Short Beach Road, Branford, Connecticut
13701211	302484	BOHVN00142A	405 Brushy Plain Rd, Branford, Connecticut
13709418	281862	BOHVN00200A	111 SECOND HILL RD, BRIDGEWATER, Connecticut
13733440	411216	BOBOS00893A	123 Palmer Road, Chaplin, Connecticut
13733449	208478	BOHVN00033A	1325 Cheshire Street, Cheshire, Connecticut
13694579	302496	BOBOS00887A	Chestnut Hill Road, Colchester, Connecticut
13694582	302465	BOBOS00890A	355 Route 85, Colchester, Connecticut
13733436	6270	BOBOS00031A	Rt 101 off Rt. 395 @1385 North Rd., Dayville, Connecticut
13702522	311305	BOHVN00147A	10 Tanner Marsh Road, Guilford, Connecticut
13733446	10029	BOBOS00894A	185 Fisk Road, Hampton, Connecticut
14046283	302466	BOBDL00079B	305 W. Service Rd., Hartford, Connecticut



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13746611	302503	BOBOS00068B	20 Mel Road, Jewett City, Connecticut
13702514	302540	BOHVN00146A	8 Old 79, Madison, Connecticut
OAA745087	411260	Middlefield CT	484 Meriden Rd., Middlefield, Connecticut
13698061	283564	BOHVN00139A	234 Melba Street, Milford, Connecticut
13702496	302516	BOHVN00144A	438 Bridgeport Ave, Milford, Connecticut
13693709	411182	BOHVN00005A	20 Antolini Road, New Hartford, Connecticut
13702509	302523	BOHVN00145A	4 Elkington Farm Rd, New Milford, Connecticut
13693659	283418	BOHVN00135A	50 Devine Street, North Haven, Connecticut
13694578	6260	BOBOS00884A	118C Wintechog Hill Rd., North Stonington, Connecticut
13693124	311014	BOBOS00023A	202 N Wawecus Hill Rd, Norwich, Connecticut
13726721	302532	BOBOS00022A	1337 Route 85, Oakdale, Connecticut
13693120	284984	BOBOS00021A	166 Pawcatuck Ave, Pawcatuck, Connecticut
13701212	302501	BOHVN00143A	297 North Street, Plymouth, Connecticut
13693135	411184	BOBOS00026A	399 West Road, SALEM, Connecticut
13729958	208205	BOHVN00035A	80 Great Hill Road, Seymour, Connecticut
13693705	411188	BOHVN00006A	111 Upper Fishrock Road, Southbury, Connecticut
13733433	415784	BOBOS00029A	165 Elmwood Hill Road, THOMPSON, Connecticut
13693127	370623	BOBOS00024A	139 Sharp Hill Road, Uncasville, Connecticut
13701206	302467	BOHVN00140A	90 North Plains Industrial Rd., Wallingford, Connecticut
13693131	411183	BOBOS00025A	53 Dayton Rd., Waterford, Connecticut
13693702	243036	BOHVN00132A	668 Jones Hill Road, West Haven, Connecticut
13729960	207941	BOHVN00036A	164 County Road, Wolcott, Connecticut
13702538	411180	BOHVN00150A	481 GOOD HILL ROAD, Woodbury, Connecticut
13733429	415439	BOBOS00027A	40 Sherman Road, Woodstock, Connecticut
13733431	415484	BOBOS00028A	445 Prospect St, Woodstock, Connecticut
13733434	418609	BOBOS00030A	87 West Quasset Road, Woodstock, Connecticut
13733438	6300	BOBOS00032A	156 Lebanon Hill Rd., Woodstock, Connecticut
13741553	283425	BOBOS00019A	350 Route 198, WOODSTOCK VALLEY, Connecticut
13743708	305310	BOPWM00004A	491 Court Street, Auburn, Maine
13743725	371976	BOPWM00007A	840 North River Rd, Auburn, Maine
13741457	371989	BOAUG00001A	627 Coldbrook Rd, BANGOR, Maine
13741460	416485	BOAUG00002A	237 Bomarc Rd, BANGOR, Maine
13735679	305311	BOBOS00433A	19 Little Harbor Road, Berwick, Maine
13746623	416552	BOPWM00012A	60 Andrews Road, Biddeford, Maine
13741463	305313	BOBOS00434A	71 Brixham Road, Eliot, Maine
13743702	10044	BOPWM00002A	26 Dorrington Drive, Freeport, Maine
13743704	281252	BOPWM00003A	71 Finn Parker Road, GORHAM, Maine



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13746621	371994	BOPWM00011A	4 Burnham Rd, Gorham, Maine
13746617	371990	BOPWM00009A	58 Buzzell Ln, Greene, Maine
13743722	371965	BOPWM00006A	67 Commercial Street, Lewiston, Maine
13746678	421397	BOPWM00013A	50 Potter Road, Lisbon, Maine
13743712	371964	BOPWM00005A	Pleasant Hill Rd, Sabattus, Maine
13738176	371992	BOBOS00777A	78 York Woods Rd, Rt 236, South Berwick, Maine
13743727	371978	BOPWM00008A	988 Roosevelt Trail, Windham, Maine
13746619	371993	BOPWM00010A	413 Roosevelt Tr, Windham, Maine
13734197	222167	BOBOS00393A	36 Knox trail, Acton, Massachusetts
13738223	371800	BOBOS00698A	107 South Main Street, Acushnet, Massachusetts
13738186	203692	BOBOS00788A	149 Haggets Pond Road, Andover, Massachusetts
13738208	371807	BOBOS00820A	165 South Main Street, ASSONET, Massachusetts
13728723	305010	BOBOS00387C	15 Washington Street, Attleboro, Massachusetts
13729951	92225	BOBOS00135A	55 Starkey Ave, Attleboro, Massachusetts
13729930	91563	BOBOS00133A	21 Parker Drive, Avon, Massachusetts
13738187	371838	BOBOS00791A	30 Shawsheen Ave, Bedford, Massachusetts
13734227	91567	BOBOS00612A	236 Maple Street, Bellingham, Massachusetts
13738231	88025	BOBOS00832A	39 Green Street, Berkley, Massachusetts
13746597	207264	BOBOS00281A	62R Anthony Street, Berkley, Massachusetts
13738152	283474	BOBOS00658A	347 Old Middlesex Turnpike, Billerica, Massachusetts
13734192	371816	BOBOS00616A	500 Morton Street, Boston, Massachusetts
13735268	305088	BOBOS00626A	22 Freeport Way, Boston, Massachusetts
13735650	262364	BOBOS00016A	53 C Pond Street, Boxford, Massachusetts
13729495	371820	BOBOS00004B	#26 Freemans Way Industrial Park, Brewster, Massachusetts
13735663	305054	BOBOS00111A	240 Burrill Avenue, Bridgewater, Massachusetts
13738201	414820	BOBOS00809A	434 Elm St., BRIDGEWATER, Massachusetts
13735259	371833	BOBOS00619A	1001 N Montello Street, Brockton, Massachusetts
13735275	371797	BOBOS00629A	500 Belmont Street, Brockton, Massachusetts
13735419	10008	BOBOS00646A	995 Belmont St., Brockton, Massachusetts
13738182	10342	BOBOS00670A	110 Mulberry Street, Brockton, Massachusetts
13738228	15456	BOBOS00389A	51 North Avenue, Burlington, Massachusetts
13746607	210761	BOBOS00139A	8 Springdale Avenue, Canton, Massachusetts
13734206	5870	BOBOS00395A	Off Montello Street, Carver, Massachusetts
13734212	15482	BOBOS00396A	31R Main Street, Carver, Massachusetts
13741598	10252	BOBOS00428A	31 J Hammond Road, Charlton, Massachusetts
13735290	371819	BOBOS00638A	7 Doris Drive, Chelmsford, Massachusetts
13759832	274893	BOBOS00636A	490 Stafford St., CHERRY VALLEY, Massachusetts



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13729557	412707	BOBOS00125A	40y Annursnac Hill Road, CONCORD, Massachusetts
13738190	240688	BOBOS00793A	323 Locust St, Danvers, Massachusetts
13735284	371805	BOBOS00631A	303 Broadway, Dracut, Massachusetts
13729926	5820	BOBOS00131A	32 Old County Road, East Wareham, Massachusetts
13734265	207267	BOBOS00282A	Upper Union Street, Franklin, Massachusetts
13735297	371782	BOBOS00644A	119 Dean Avenue, Franklin, Massachusetts
13735315	16228	BOBOS00649A	60 EARL'S WAY, Franklin, Massachusetts
13735654	10321	BOBOS00102A	16 Kondelin Rd, Gloucester, Massachusetts
13735670	305111	BOBOS00192B	400 Blackburn Drive, Gloucester, Massachusetts
13746594	210758	BOBOS00137A	434-438 Asbury Street, Hamilton, Massachusetts
13735658	283651	BOBOS00108A	263 Winter Street, Hanover, Massachusetts
13735666	371796	BOBOS00114A	171 Phillips Street, Hanson, Massachusetts
13741290	283476	BOBOS00615A	75 Willow Avenue, Haverhill, Massachusetts
13741718	283472	BOBOS01024A	1 Masys Way, Haverhill, Massachusetts
13743700	15659	BOBOS00903A	260 River Street, Jefferson, Massachusetts
13738229	305004	BOBOS00831A	23 Freetown Steet, Lakeville, Massachusetts
13735281	305117	BOBOS00630A	670 South Union Street, LAWRENCE, Massachusetts
13735286	371778	BOBOS00633A	576 Haverhill St, Lawrence, Massachusetts
13735709	210759	BOBOS00138A	280 New Lancaster Road, Leominster, Massachusetts
13743687	371808	BOBOS00853A	650 Willard Street, Leominster, Massachusetts
13735656	222165	BOBOS00105A	2005 Mass Ave, Lunenburg, Massachusetts
13734270	207263	BOBOS00283A	13 Mill Street, Marion, Massachusetts
13729921	412712	BOBOS00128A	860 BOSTON POST ROAD, Marlborough, Massachusetts
13738193	284981	BOBOS00806A	969 Ocean Street, Marshfield, Massachusetts
13746615	207266	BOBOS00284A	Holyoke Avenue, Marshfield, Massachusetts
13772780	202550	BOBOS01156C	0 Snow Road, Marshfield, Massachusetts
13735659	305027	BOBOS00109A	34 Topalian Street, Mattapan, Massachusetts
13734275	208176	BOBOS00285A	Summer Hill Road, Maynard, Massachusetts
13734201	16489	BOBOS00391A	31 BEDFORD ST, Middleboro, Massachusetts
13738205	305006	BOBOS00813A	164 Everett Street, Middleboro, Massachusetts
13735294	283071	BOBOS00641A	11 Natsue Way, MIDDLETON, Massachusetts
13735657	283070	BOBOS00107A	197 N. Main Street, MIDDLETON, Massachusetts
13743676	283767	BOBOS00842A	120 Highland Street, MILFORD, Massachusetts
13749484	91566	BOBOS00355B	111 Cedar Street, Milford, Massachusetts
13729925	412713	BOBOS00129A	25 Glenwood Street, Natick, Massachusetts
13734249	5762	BOBOS00614A	1555 Central Ave, Needham, Massachusetts
13735272	5860	BOBOS00628A	148 Penniman St., New Bedford, Massachusetts





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13737649	204458	BOBOS00651A	9 Eighth St, NEW BEDFORD, Massachusetts
13742882	305097	BOBOS00426A	127 R Duchaine Blvd., New Bedford, Massachusetts
13735652	1028	BOBOS00101A	1165 Chestnut Street, Newton, Massachusetts
13735266	305113	BOBOS00624A	20 Republic Road, North Billerica, Massachusetts
13742899	91886	BOBOS00758A	411 FAUNCE CORNER RD, North Dartmouth, Massachusetts
13738213	371810	BOBOS00829A	455 Somerset Avenue, North Dighton, Massachusetts
13741485	88027	BOBOS00833A	Maple Street, North Dighton, Massachusetts
13743644	91565	BOBOS00735A	38 Merriam District, North Oxford, Massachusetts
13735264	284980	BOBOS00620A	59 Davis Ave, Norwood, Massachusetts
13746603	207726	BOBOS00287A	15 Locust Road, Orleans, Massachusetts
13738197	15768	BOBOS00807A	171Mattakeesett Street, Pembroke, Massachusetts
13729507	371799	BOBOS00115A	75 Washington Street, Plainville, Massachusetts
13742871	10370	BOBOS00422A	50 Portside Drive, Pocasset, Massachusetts
13734236	10341	BOBOS00613A	106 Mazzeo Drive, Randolph, Massachusetts
13738200	305096	BOBOS00808A	1588 Broadway, Raynham, Massachusetts
13738203	10339	BOBOS00810A	678 Church Street, Raynham, Massachusetts
13738206	310959	BOBOS00817A	153 Cranberry Highway, Rochester, Massachusetts
13734282	207270	BOBOS00288A	320 Pleasant Street, Rockland, Massachusetts
13738199	305035	BOBOS00673A	488R Highland Avenue, Salem, Massachusetts
13742875	273378	BOBOS00423A	413 Rt 130, Sandwich, Massachusetts
13734198	10340	BOBOS00394A	1010 Chief Justice Cushing Highway, Scituate, Massachusetts
13741690	282810	BOBOS01155A	361 TILDEN RD, SCITUATE, Massachusetts
13729506	16459	BOBOS00103A	45 Vineyard Road, Seekonk, Massachusetts
13735664	207271	BOBOS00280A	212 Lake Street, Sherborn, Massachusetts
13738202	305051	BOBOS00674A	16 Kendall Avenue, Sherborn, Massachusetts
13735748	202086	BOBOS00659A	271 Spring Street, Shrewsbury, Massachusetts
13743636	91568	BOBOS00688A	800 Boston Turnpike, Shrewsbury, Massachusetts
13710032	371813	BOBOS00118A	3 Redemption Rock Trail, Sterling, Massachusetts
13741607	416056	BOBOS00866A	199 Raymond Rd., Sudbury, Massachusetts
13870803	371774	BOBOS00013D	142 North Road, Sudbury, Massachusetts
13743641	305009	BOBOS00733A	7 Kamaitas Road, Sutton, Massachusetts
13743672	305014	BOBOS00841A	194 Stone School Road, Sutton, Massachusetts
13742886	5830	BOBOS00427A	28 Dana Street, Taunton, Massachusetts
13729513	388560	BOBOS00122A	89 Progress Avenue, Tyngsboro, Massachusetts
13743680	305104	BOBOS00845A	87 Adams St., Upton, Massachusetts
13743669	305110	BOBOS00838A	70 Quaker Street, Uxbridge, Massachusetts
13734219	275069	BOBOS00601A	110 Bear Hill, Waltham, Massachusetts



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13737625	5810	BOBOS00816A	Thatcher Street, Wareham, Massachusetts
13743683	274897	BOBOS00851A	0 Century Drive, West Boylston, Massachusetts
13749477	305068	BOBOS00664B	225 Rivermoor St., West Roxbury, Massachusetts
13682009	283067	BOBDL00158A	1201 Westfield Street, WEST SPRINGFIELD, Massachusetts
13743698	9238	BOBOS00878A	972 Gilbert Road, West Warren, Massachusetts
13735736	305105	BOBOS00637A	25 Brigham Street, Westborough, Massachusetts
13743638	282319	BOBOS00690A	50 SMITH VALVE PKWY, WESTBOROUGH, Massachusetts
13734203	305034	BOBOS00392A	8 Nixon Rd., Westford, Massachusetts
13734284	274896	BOBOS00334B	19 Oak Street, Weston, Massachusetts
13735662	305041	BOBOS00110A	0 Nonesuch Road, Weston, Massachusetts
13742877	91559	BOBOS00425A	251 State Road, Westport, Massachusetts
13729511	371818	BOBOS00120A	611 Pleasant Street, Weymouth, Massachusetts
13735271	305028	BOBOS00627A	106 Finnell Dr., Weymouth, Massachusetts
13735303	282706	BOBOS00645A	10 Presidential Way, Woburn, Massachusetts
13772775	305060	BOBOS01068A	Green Street, Wrentham, Massachusetts
13741478	15136	BOBOS00443A	73 State Route 111, Atkinson, New Hampshire
13743271	91575	BOBOS00457A	437 Patten Hill Road, Candia, New Hampshire
13743029	306604	BOBOS00446A	359 Chester Street, Chester, New Hampshire
13743257	373098	BOBOS00449A	50 Town Dump Road, Chester, New Hampshire
13743267	88065	BOBOS00455A	674 Haverhill Road, Chester, New Hampshire
13743035	373099	BOBOS00450A	203 Haverhill Road, East Kingston, New Hampshire
13738226	91574	BOBOS00768A	49 Shirking Road, Epping, New Hampshire
13743263	373114	BOBOS00453A	7 CONTINENTAL DRIVE, Exeter, New Hampshire
13738179	373094	BOBOS00781A	789 Main Street, Fremont, New Hampshire
13743264	413027	BOBOS00454A	169 HAYDEN ROAD, HOLLIS, New Hampshire
13741480	15138	BOBOS00444A	36 Depot Road, Kingston, New Hampshire
13738183	273268	BOBOS00785A	242 New Derry Rd, Litchfield, New Hampshire
13738224	373116	BOBOS00705A	94 STONEHEDGE ROAD, Londonderry, New Hampshire
13743269	88069	BOBOS00456A	187A Pillsbury Road, Londonderry, New Hampshire
13738211	91571	BOBOS00683A	20 Daniel Webster Highway, Merrimack, New Hampshire
13741468	10304	BOBOS00441A	211 Ford Farm Road, Milton, New Hampshire
13743256	311757	BOBOS00448A	61 Old Coach Road, New Boston, New Hampshire
13743258	373101	BOBOS00451A	85 South Main Street, Newton, New Hampshire
13743031	311755	BOBOS00447A	34 Tower Hill Road, Pelham, New Hampshire
13741470	15134	BOBOS00442A	36 Cross Road, Rochester, New Hampshire
13743027	240696	BOBOS00445A	40 Jessie Doe Road, Rollinsford, New Hampshire
13743259	373102	BOBOS00452A	393 Main Street, Sandown, New Hampshire



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13714952	307060	SYSYR00023A	200 Irwin Road, Buffalo, New York
13767336	415364	SYSYR00507B	183 Saltonstall Street, Canandaigua, New York
13702046	373349	ALALB00011A	75 Van Dyke Road, Delmar, New York
13973540	392593	SYSYR00038A	571 Main Street, East Aurora, New York
13752077	413141	SYSYR00517B	91 Railroad Ave, Hamlin, New York
13713785	16467	SYSYR00015A	3181 Southwestern Blvd, Orchard Park, New York
13714492	414560	SYSYR00061A	4248 S. Taylor Road, Orchard Park, New York
13870807	91916	SYSYR00081A	County Route 6 and Fox Dr, Phoenix, New York
13712307	413140	SYSYR00407A	3830 Monroe Avenue, Pittsford, New York
13704766	91936	ALALB00020A	1245 Kings Road, SCHENECTADY, New York
OAA745429	280868	0190112-A	10790 Taylors Store Rd, Nashville, North Carolina
13741714	91582	BOBOS00881A	395 Woodville Road, Ashaway, Rhode Island
13738163	91983	BOBOS00662A	99 Tupelo Street, Bristol, Rhode Island
13743277	308765	BOBOS00586B	6 Minturn Farm Road, Bristol, Rhode Island
13742900	281265	BOBOS00899A	1380 Putnam Pike, CHEPACHET, Rhode Island
13735691	374117	BOBOS00522A	149 Laten Knight Road, Cranston, Rhode Island
13738222	374136	BOBOS00697A	1000 New London Avenue, Cranston, Rhode Island
13735296	374138	BOBOS00642A	500 Veterans Memorial Parkway, East Providence, Rhode Island
13738188	308768	BOBOS00672A	1 Dexter Road, East Providence, Rhode Island
13742895	1031	BOBOS00677A	2 Sunderland Road, Exeter, Rhode Island
13741622	374114	BOBOS00898A	2185 Putnam Pike, Glocester, Rhode Island
13743044	308772	BOBOS00519A	1677 Maple Valley Road, Greene, Rhode Island
13774131	91984	BOBOS00518B	2612 Victory Hwy, Harrisville, Rhode Island
13737644	91985	BOBOS00650A	74 Maria Ave., JOHNSTON, Rhode Island
13738150	273282	BOBOS00654A	32 Breakneck Hill Road, Lincoln, Rhode Island
13735720	6350	BOBOS00525A	1230 Chopmist Hill Rd. Rt. 102, North Scituate, Rhode Island
13743039	308766	BOBOS00517A	316 South Main St., Pascoag, Rhode Island
13738157	91581	BOBOS00661A	10 Dunnell Lane, Pawtucket, Rhode Island
13741493	91584	BOBOS00836A	205 Farnum Pike, Smithfield, Rhode Island
14049070	308759	BOBOS00587C	2935 Tower Hill Road, South Kingstown, Rhode Island
13738210	374137	BOBOS00828A	408 Stafford Road, Tiverton, Rhode Island
13738221	91986	BOBOS00696A	15 New Industrial Road, Warren, Rhode Island
13743273	308757	BOBOS00584B	289 Kilvert Street, Warwick, Rhode Island
13735687	374115	BOBOS00521A	244 Plain Road, West Greenwich, Rhode Island
13735723	91578	BOBOS00583A	830 Nooseneck Hill Road, West Greenwich, Rhode Island
13735700	374133	BOBOS00524A	226C Cowesett Avenue, West Warwick, Rhode Island
13735726	91579	BOBOS00585B	195 J.P. Murphy Highway, West Warwick, Rhode Island



**AMERICAN TOWER®**  
CORPORATION

13742891	207962	BOBOS00552A	37 Laurel Avenue, Westerly, Rhode Island
13735695	374119	BOBOS00523A	9 New Kings Factory Road, Wood River Junction, Rhode Island

Signature: \_\_\_\_\_

Margaret Robinson, Senior Counsel  
US Tower Division

**NOTARY BLOCK**

COMMONWEALTH OF MASSACHUSETTS  
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel of American Tower (owner and/or operator of the above referenced Tower Facilities), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 24th day of March, 2022.

NOTARY SEAL



**GERARD T. HEFFRON**  
Notary Public  
Commonwealth of Massachusetts  
My Commission Expires  
August 9, 2024

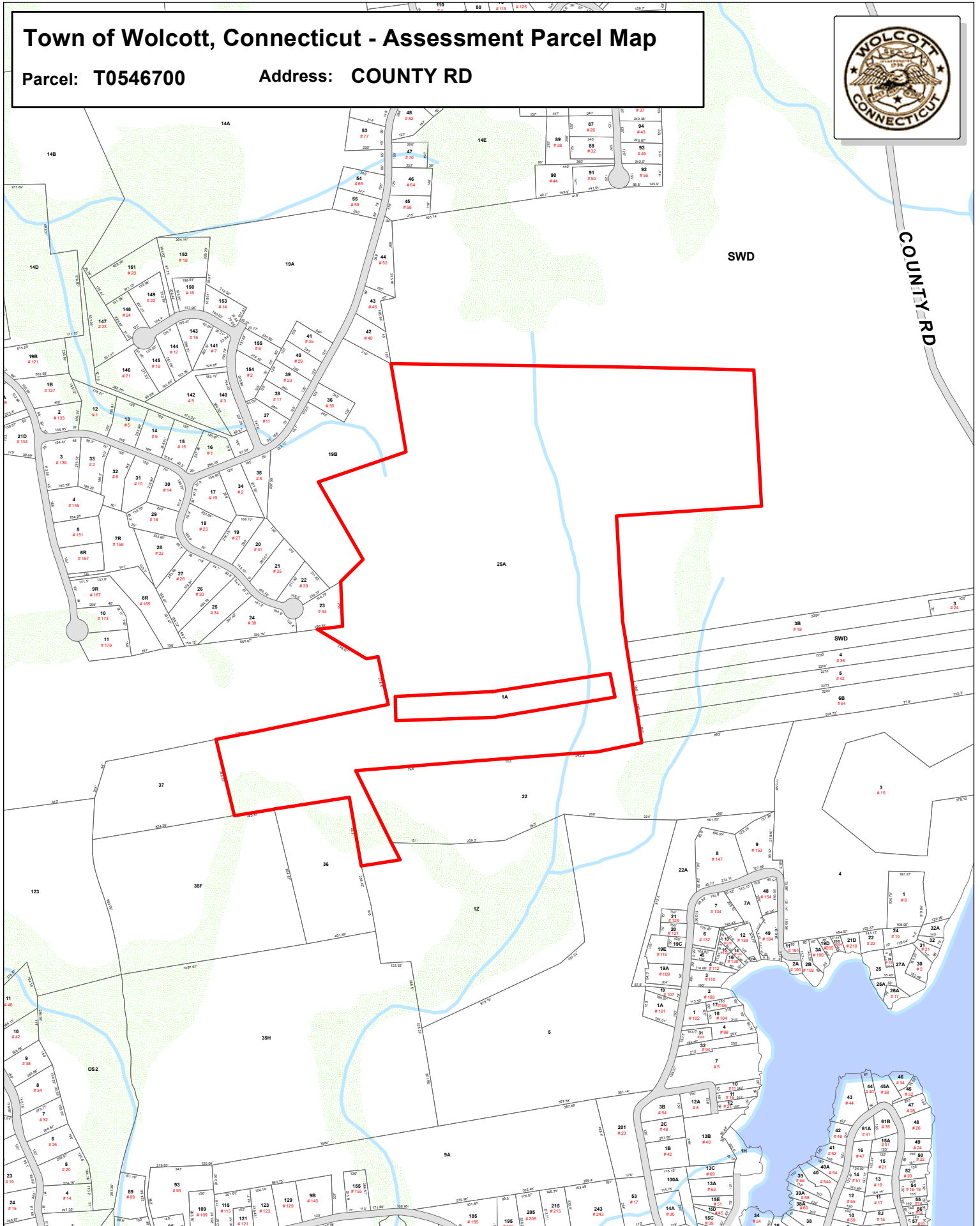
Notary Public Gerard T. Heffron  
My Commission Expires: August 9th, 2024

\* American Tower as used herein is defined as American Tower Corporation and any of its affiliates or subsidiaries.

# Town of Wolcott, Connecticut - Assessment Parcel Map

Parcel: T0546700

Address: COUNTY RD



Map Produced Feb 2022



Approximate Scale: 1 inch = 700 feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Wolcott and its mapping contractors assume no legal responsibility for the information contained herein.



## Viewer

## Information

Show search results for **164...**

**Location: COUNTY RD**

Account	T0546700
MBLU	130-1-25A
Owner Name	INSITE TOWERS LLC
Acres	29.50
Zoning	R-130
Land Use	202
Sale Price	25,000
Sale Date	2013-01-10
Vol / Page	0453 / 0541
Built	0
Improved	0
Style	Vacant Land
Complex	

[Zoom to](#)

25A

3B

# 18

SWD

4

# 38

5

3

# 24

6

# 48

-72.958 41.577 Degrees

300ft



# COUNTY RD

**Location** COUNTY RD

**Mblu** 130/ 1/ 25A/ /

**Acct#** T0546700

**Owner** INSITE TOWERS LLC

**Assessment** \$246,230

**Appraisal** \$351,750

**PID** 6058

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$19,500	\$332,250	\$351,750
Assessment			
Valuation Year	Improvements	Land	Total
2021	\$13,650	\$232,580	\$246,230

## Owner of Record

**Owner** INSITE TOWERS LLC

**Co-Owner**

**Address** 301 N FAIRFAX ST  
SUITE 101  
ALEXANDRIA, VA 22314

**Sale Price** \$25,000

**Certificate**

**Book & Page** 0453/0541

**Sale Date** 01/10/2013

**Instrument** 25

## Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
INSITE TOWERS LLC	\$25,000		0453/0541	25	01/10/2013
TELESYSTEMS OF CONN INC	\$0		0110/0599	25	05/10/1974

## Building Information

### Building 1 : Section 1

**Year Built:**

**Living Area:** 0

**Replacement Cost:** \$0

**Building Percent Good:**

**Replacement Cost**

**Less Depreciation:** \$0

Building Attributes	
Field	Description
Style	Vacant Land
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	

### Building Photo



(<http://images.vgsi.com/photos/WolcottCTPhotos/\00\01\11\38.jpg>)

### Building Layout

(<ParcelSketch.ashx?pid=6058&bid=6058>)

Building Sub-Areas (sq ft)	Legend
----------------------------	--------



Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Percent	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Fireplace(s)	
% Attic Fin	
LF Dormer	
Foundation	
Bsmt Gar(s)	
Bsmt %	
SF FBM	
SF Rec Rm	
Fin Bsmt Qual	
Bsmt Access	
Fndtn Cndtn	

No Data for Building Sub-Areas

Basement	
----------	--

## Extra Features

Extra Features	Legend
No Data for Extra Features	

## Land

### Land Use

**Use Code** 202  
**Description** Comm w/OB  
**Zone** R-130  
**Neighborhood** CGEN  
**Alt Land Appr Category** No

### Land Line Valuation

**Size (Acres)** 29.50  
**Frontage**  
**Depth**  
**Assessed Value** \$232,580  
**Appraised Value** \$332,250

## Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN3	FENCE-6' CHAIN			200.00 L.F.	\$1,500	1
CELL	Cell	SH	Cell Shed	240.00 S.F.	\$18,000	1

## Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$19,500	\$279,550	\$299,050

2019		\$19,500	\$279,550	\$299,050
2018		\$19,500	\$279,550	\$299,050

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2020	\$13,650	\$195,690	\$209,340
2019	\$13,650	\$195,690	\$209,340
2018	\$13,650	\$195,690	\$209,340

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164 COUNTY RD

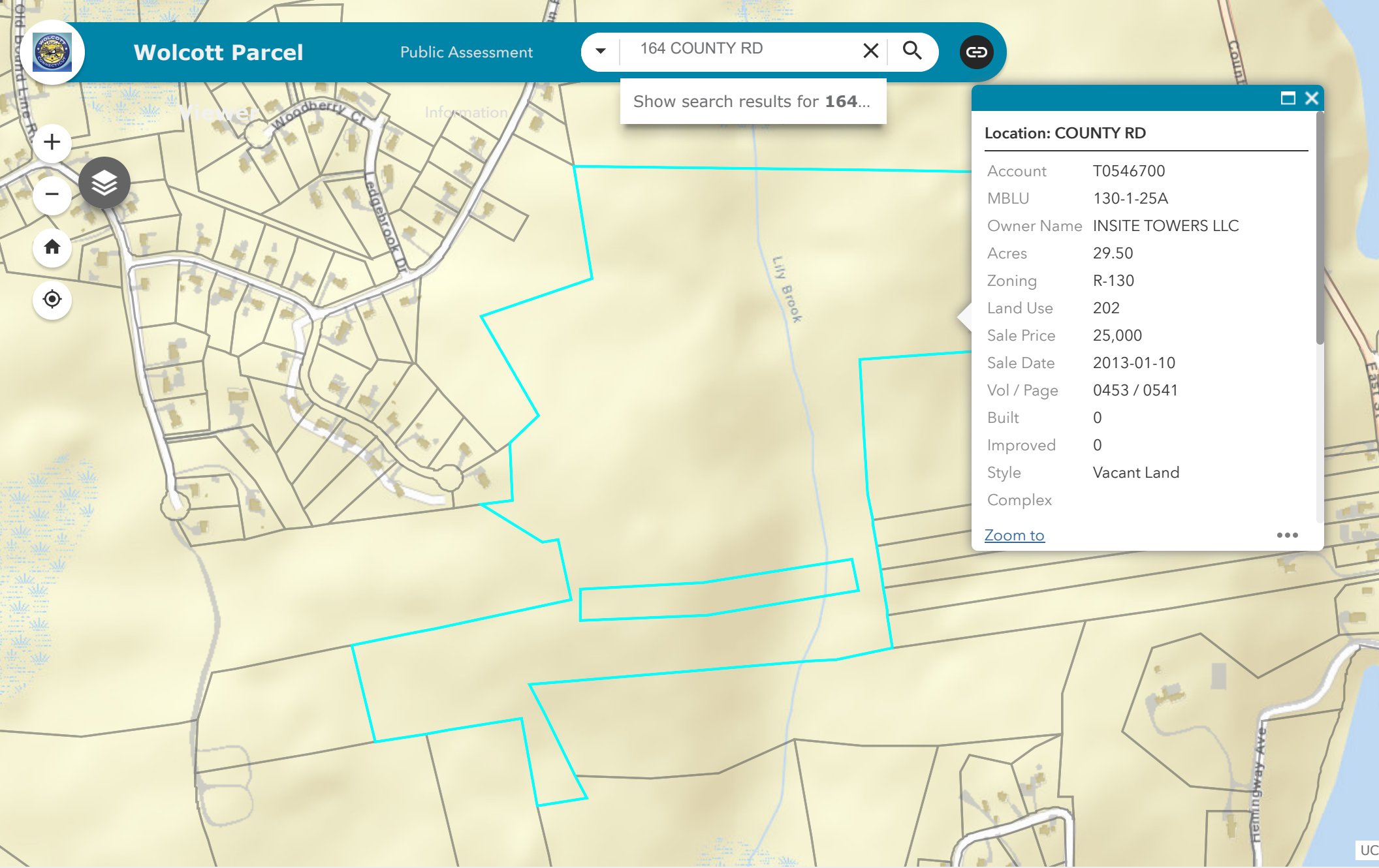


Show search results for 164...

**Location: COUNTY RD**

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Zoning	R-130
Land Use	202
Sale Price	25,000
Sale Date	2013-01-10
Vol / Page	0453 / 0541
Built	0
Improved	0
Style	Vacant Land
Complex	

[Zoom to](#) ...



-72.961 41.576 Degrees

600ft



RADIO FREQUENCY EMISSIONS ANALYSIS REPORT  
EVALUATION OF HUMAN EXPOSURE POTENTIAL  
TO NON-IONIZING EMISSIONS

Dish Wireless Existing Facility

Site ID: BOHVN00036A

BOHVN00036A  
164 County Road  
Wolcott, Connecticut 06716

**November 19, 2021**

**EBI Project Number: 6221007087**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>2.10%</b>

November 19, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00036A - BOHVN00036A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **164 County Road** in **Wolcott, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 164 County Road in Wolcott, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 223 feet above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.



## Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	I	Antenna #:	I	Antenna #:	I
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	223 feet	Height (AGL):	223 feet	Height (AGL):	223 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna AI MPE %:	<b>0.50%</b>	Antenna BI MPE %:	<b>0.50%</b>	Antenna CI MPE %:	<b>0.50%</b>

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	0.50%
Cox Comm.	0.07%
Sprint	1.35%
Clearwire	0.05%
T-Mobile	0.13%
<b>Site Total MPE % :</b>	<b>2.10%</b>

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.50%
Dish Wireless Sector B Total:	0.50%
Dish Wireless Sector C Total:	0.50%
<b>Site Total MPE % :</b>	<b>2.10%</b>

Dish Wireless Maximum MPE Power Values (Sector A)							
Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	223.0	0.68	600 MHz n71	400	0.17%
Dish Wireless 1900 MHz n70	4	542.70	223.0	1.66	1900 MHz n70	1000	0.17%
Dish Wireless 2190 MHz n66	4	542.70	223.0	1.66	2190 MHz n66	1000	0.17%
						<b>Total:</b>	<b>0.50%</b>

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish Wireless facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.50%
Sector B:	0.50%
Sector C:	0.50%
Dish Wireless Maximum MPE % (Sector A):	0.50%
Site Total:	2.10%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **2.10%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

# INFINIGY

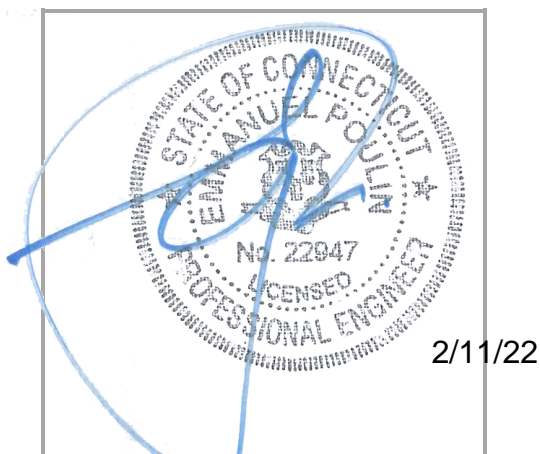
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## MOUNT ANALYSIS REPORT

January 28, 2022

Dish Wireless Site Name	BOHVN00036A
Dish Wireless Site Number	207941
Infinigy Job Number	1197-F0001-B
Client	NSS
Carrier	Dish Wireless
Site Location	164 County Road Wolcott, CT 06716 New Haven County 41° 34' 34.388" N NAD83 72° 57' 21.849" W NAD83
Structure Type	Guyed Tower
Structure Height	348.2 ft
Mount Type	223.0 ft Sector Frame
Mount Elevation	233.0 ft AGL
Structural Usage Ratio	<b>44.2%</b>
<b>Overall Result</b>	<b>Pass</b>

The enclosed structural analysis has been performed in accordance with the 2015 IBC based on an ultimate 3-second gust wind speed of 121 mph. The evaluation criteria and applicable standards are presented in the next section of this report.



Emmanuel Poulin, P.E.  
structural@infinigy.com  
CT P.E. License Number: 22947

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**CONTENTS**

1. Introduction
2. Design/Analysis Parameters
3. Proposed Loading Configuration
4. Supporting Documentation
5. Results
6. Recommendations
7. Assumptions
8. Liability Waiver and Limitations
9. Calculations

## 1. INTRODUCTION

Infinigy performed a structural analysis on the Dish Wireless proposed telecommunication equipment supporting Sector Frame mounted to the existing structure located at the aforementioned address. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using Risa version 17.0.4 analysis software.

## 2. DESIGN/ANALYSIS PARAMETERS

Wind Speed	121 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1.00in ice
Adopted Code	2015 IBC
Standard(s)	TIA-222-H
Risk Category	II
Exposure Category	C
Topographic Factor	1.00
Seismic Spectral Response	$S_s = 0.186 \text{ g} / S_1 = 0.064 \text{ g}$
Live Load Wind Speed	30 mph
Man Live Load at Mid/End Points	250 lbs
Man Live Load at Mount Pipes	500 lbs
Ground Elevation (HMSL)	736.07 ft

## 3. PROPOSED LOADING CONFIGURATION - 233.0 ft. AGL Sector Frame

Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
233.0	3	JMA WIRELESS	MX08FRO665-21
	3	FUJITSU	TA08025-B604
	3	FUJITSU	TA08025-B605
	1	RAYCAP	RDIDC-9181-PF-48

## 4. SUPPORTING DOCUMENTATION

Construction Drawings	A.T. Engineering service, PLLC dated 2/10/2022
-----------------------	--

## 5. RESULTS

Components	Capacity	Pass/Fail
Mount Pipes	9.2%	Pass
Horizontals	9.7%	Pass
Bracings	27.5%	Pass
Stand-Offs	26.3%	Pass
Tie-Back	10.4%	Pass
Mount to Tower Connection	44.2%	Pass
<b>RATING =</b>	<b>44.2%</b>	<b>Pass</b>

### Notes:

- See additional documentation in Appendix for calculations supporting the capacity consumed and detailed mount connection calculations.
- All sectors are typical.

## 6. RECOMMENDATIONS

Infinigy recommends installing Dish Wireless's proposed equipment loading configuration on the Sector Frame at 233.0 ft. The installation shall be performed in accordance with the construction documents issued for this site.

If you have any questions, require additional information, or believe the actual conditions differ from those detailed in this report, please contact us immediately.

Iker Moreno, E.I.T  
Project Engineer I | **INFINIGY**

**7. ASSUMPTIONS**

The antenna mounting system was properly fabricated, installed and maintained in accordance with its original design and manufacturer's specifications.	
The configuration of antennas, mounts, and other appurtenances are as specified in the proposed loading configuration table.	
All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.	
The analysis will require revisions if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.	
Steel grades have been assumed as follows, unless noted otherwise:	
Channel, Solid Round, Angle, Plate	ASTM A36
HSS (Rectangular)	ASTM A500-B GR 46
HSS (Circular)	ASTM A500-B GR 42
Pipe	ASTM A53-B GR 35
Connection Bolts	ASTM A325
U-Bolts	ASTM A307
All bolted connections are pretensioned in accordance with Table 8.2 of the RCSC 2014 Standard.	

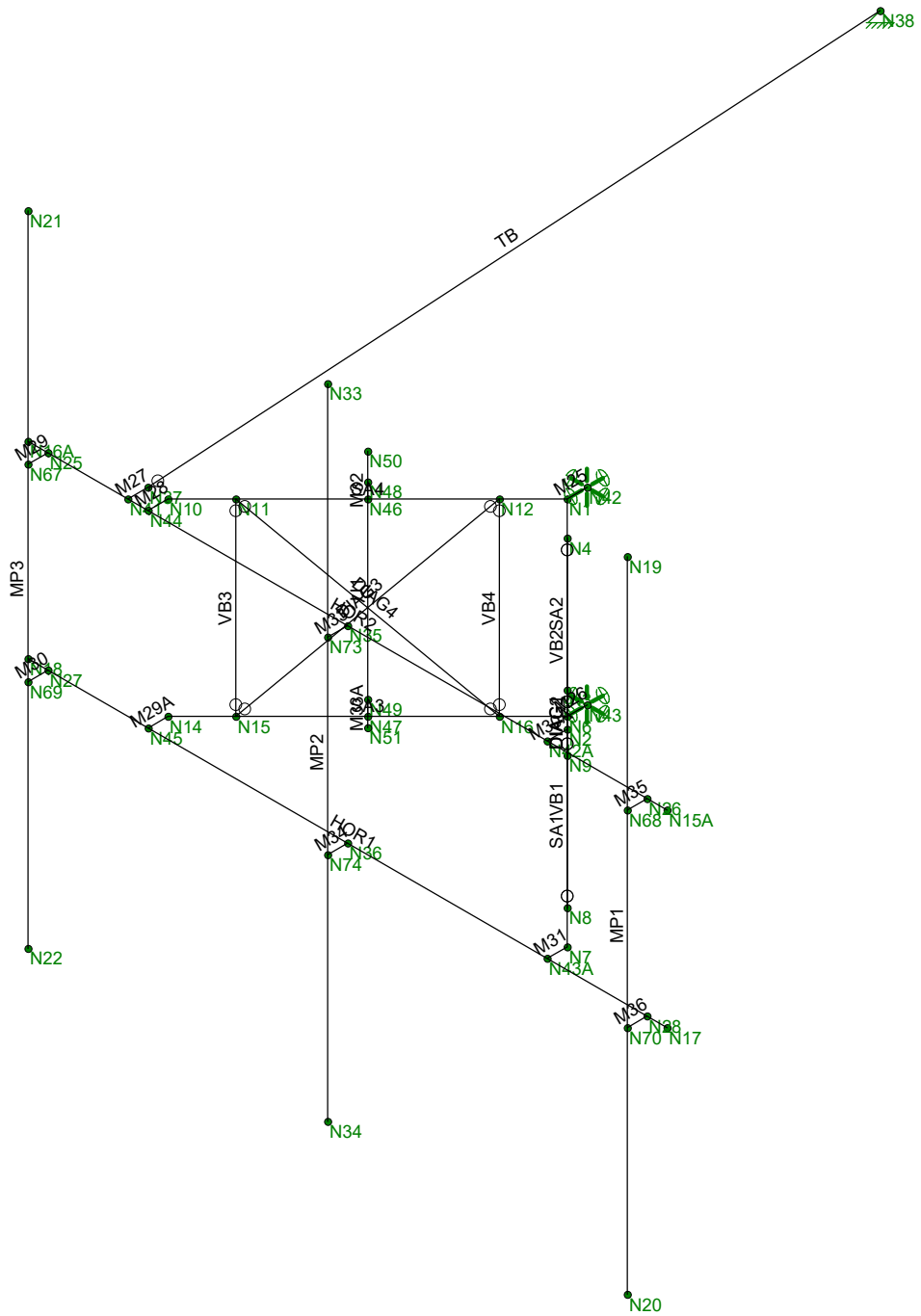
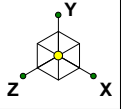
**8. LIABILITY WAIVER AND LIMITATIONS**

Our structural calculations are completed assuming all information provided to Infinigy is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition as erected and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report, Infinigy should be notified immediately to assess the impact on the results of this report.

Our evaluation is completed using industry standard methods and procedures. The structural results, conclusions and recommendations contained in this report are proprietary and should not be used by others as their own. Infinigy is not responsible for decisions made by others that are or are not based on the stated assumptions and conclusions in this report.

This report is an evaluation of the mount structure only and does not determine the adequacy of the supporting structure, other carrier mounts or cable mounting attachments. The analysis of these elements is outside the scope of this analysis, are assumed to be adequate for the purpose of this report and to have been installed per their manufacturer requirements. This document is not for construction purposes.





Infinigy Engineering

IM

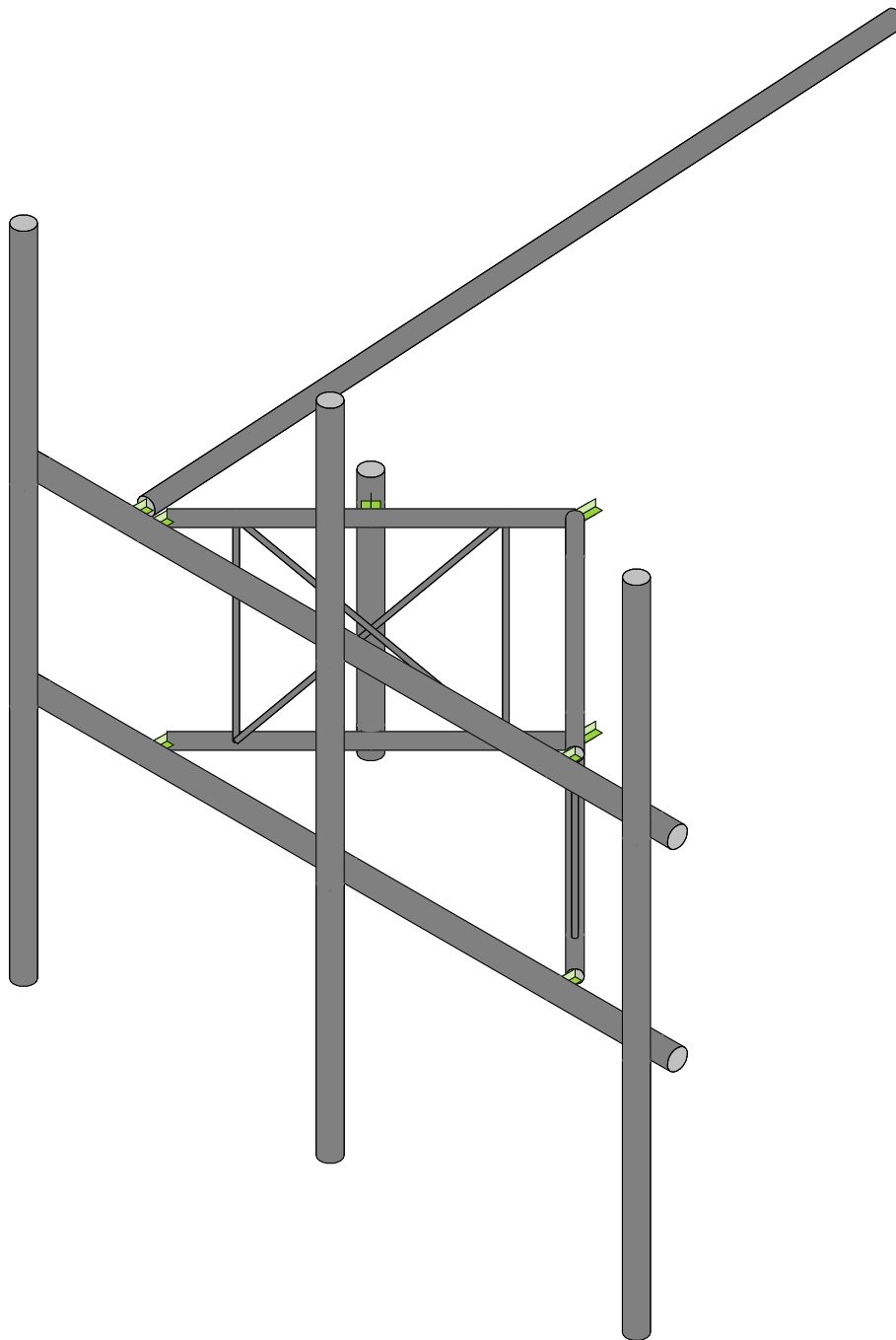
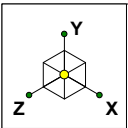
1197-F0001

BOVN00036A

Wireframe

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Infinigy Engineering  
IM  
1197-F0001

BOVN00036A

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## Program Inputs

PROJECT INFORMATION		
Client:	NSS	
Carrier:	Dish Wireless	
Engineer:	Iker Moreno	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	737.07	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	223.00	ft
Tower Height AGL:	348.20	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. ( $K_d$ ):	0.950	
Ground Ele. Factor ( $K_e$ ):	0.974	*Rev H Only
Rooftop Speed-Up ( $K_s$ ):	1.000	*Rev H Only
Topographic Factor ( $K_{zt}$ ):	1.000	
Gust Effect Factor ( $G_h$ ):	1.000	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

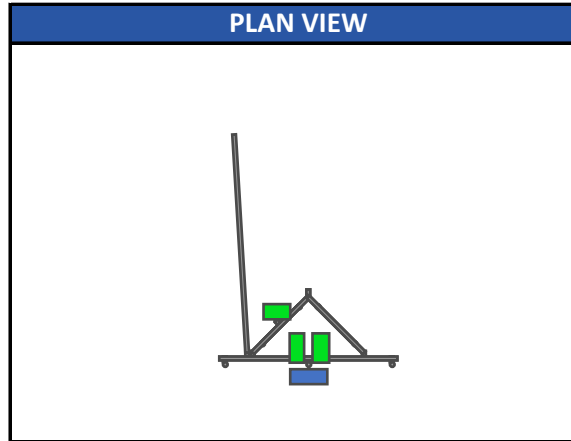
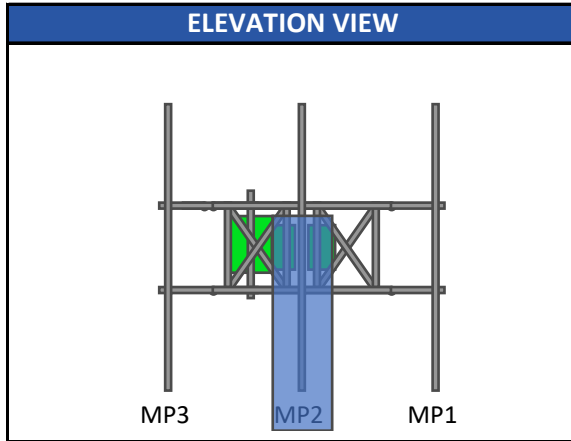
WIND AND ICE DATA		
Ultimate Wind ( $V_{ult}$ ):	121	mph
Design Wind ( $V$ ):	N/A	mph
Ice Wind ( $V_{ice}$ ):	50	mph
Base Ice Thickness ( $t_i$ ):	1.5	in
Flat Pressure:	103.898	psf
Round Pressure:	62.339	psf
Ice Wind Pressure:	10.645	psf

SEISMIC DATA		
Short-Period Accel. ( $S_s$ ):	0.186	g
1-Second Accel. ( $S_1$ ):	0.064	g
Short-Period Design ( $S_{DS}$ ):	0.198	
1-Second Design ( $S_{D1}$ ):	0.102	
Short-Period Coeff. ( $F_a$ ):	1.600	
1-Second Coeff. ( $F_v$ ):	2.400	
Amplification Factor ( $A_s$ ):	3.000	
Response Mod. Coeff. (R):	2.000	



Infinigy Load Calculator V2.1.7

## Program Inputs



Infinigy Load Calculator V2.1.7

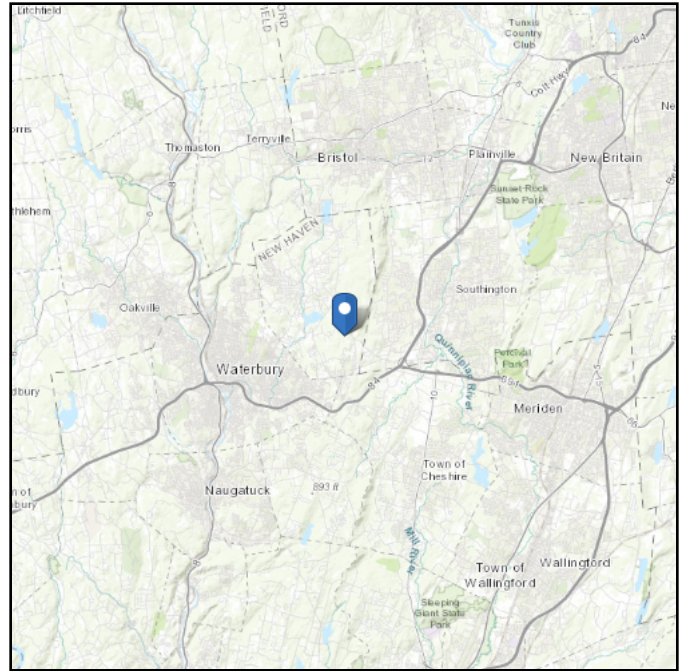
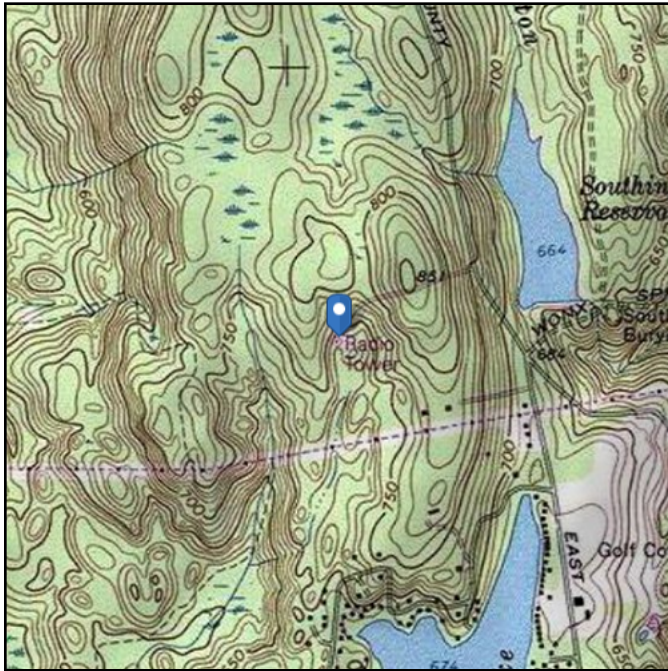
APPURTENANCE INFORMATION												
Appurtenance Name	Elevation	Qty.	$K_a$	$q_z$ (psf)	$EPA_N$ (ft <sup>2</sup> )	$EPA_T$ (ft <sup>2</sup> )	Wind $F_z$ (lbs)	Wind $F_x$ (lbs)	Weight (lbs)	Seismic F (lbs)	Member ( $\alpha$ sector)	
JMA WIRELESS MX08FRO665-21	223.0	3	0.90	51.95	8.01	3.21	374.50	150.08	64.50	19.20	MP2	
FUJITSU TA08025-B604	223.0	3	0.90	51.95	1.95	0.97	91.14	45.28	63.90	19.02	MP2	
FUJITSU TA08025-B605	223.0	3	0.90	51.95	1.95	1.12	91.14	52.25	74.95	22.31	MP2	
RAYCAP RDIDC-9181-PF-48	223.0	1	0.90	51.95	2.28	1.29	106.41	60.27	21.82	6.49	U1	

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

**Standard:** ASCE/SEI 7-10  
**Risk Category:** II  
**Soil Class:** D - Stiff Soil

**Elevation:** 736.07 ft (NAVD 88)  
**Latitude:** 41.576219  
**Longitude:** -72.956069



## Wind

### Results:

Wind Speed	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

**Data Source:** ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

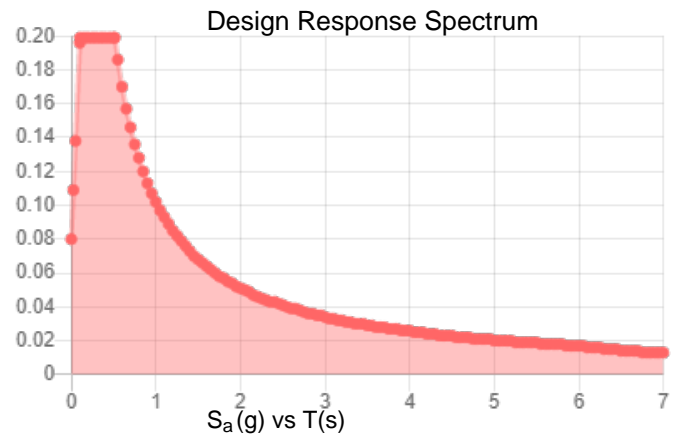
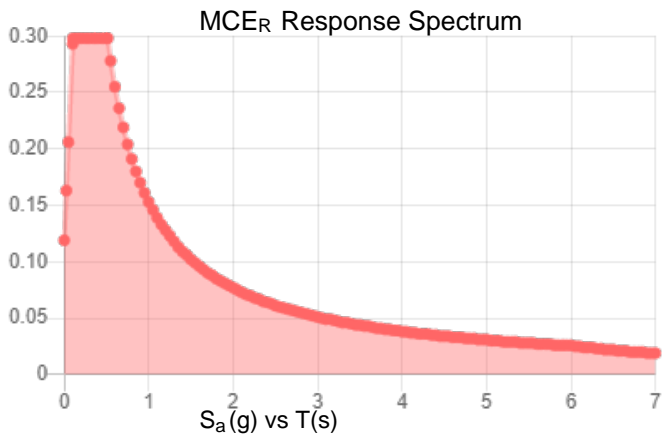
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

**Site Soil Class:** D - Stiff Soil

**Results:**

$S_s$ :	0.186	$S_{DS}$ :	0.199
$S_1$ :	0.064	$S_{D1}$ :	0.102
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.096
$S_{MS}$ :	0.298	PGA <sub>M</sub> :	0.154
$S_{M1}$ :	0.153	F <sub>PGA</sub> :	1.6
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:** Thu Feb 10 2022

**Date Source:**

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

## Ice

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**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed 50 mph

**Data Source:** Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

**Date Accessed:** Thu Feb 10 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	SA2	N2	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
2	SA1	N7	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
3	VB1	N3	N8			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
4	VB2	N4	N9			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
5	DIAG1	N4	N8			Diagonal	VBrace	BAR	A529 Gr.50	Typical
6	DIAG2	N3	N9			Diagonal	VBrace	BAR	A529 Gr.50	Typical
7	SA4	N10	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
8	SA3	N14	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
9	VB3	N11	N15			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
10	VB4	N12	N16			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
11	DIAG3	N12	N15			Diagonal	VBrace	BAR	A529 Gr.50	Typical
12	DIAG4	N11	N16			Diagonal	VBrace	BAR	A529 Gr.50	Typical
13	HOR2	N16A	N15A			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
14	HOR1	N18	N17			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
15	MP3	N22	N21			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
16	MP1	N20	N19			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
17	MP2	N34	N33			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
18	TB	N37	N38			Tieback	Beam	Pipe	A500 Gr.46	Typical
19	M29	N25	N67			RIGID	None	None	RIGID	Typical
20	M30	N27	N69			RIGID	None	None	RIGID	Typical
21	M33	N35	N73			RIGID	None	None	RIGID	Typical
22	M34	N36	N74			RIGID	None	None	RIGID	Typical
23	M35	N26	N68			RIGID	None	None	RIGID	Typical
24	M36	N28	N70			RIGID	None	None	RIGID	Typical
25	M25	N1	N42			RIGID	None	None	RIGID	Typical
26	M26	N6	N43			RIGID	None	None	RIGID	Typical
27	M27	N37	N41			RIGID	None	None	RIGID	Typical
28	M28	N10	N44			RIGID	None	None	RIGID	Typical
29	M29A	N14	N45			RIGID	None	None	RIGID	Typical
30	M30A	N2	N42A			RIGID	None	None	RIGID	Typical
31	M31	N7	N43A			RIGID	None	None	RIGID	Typical
32	M32	N46	N48			RIGID	None	None	RIGID	Typical
33	M33A	N47	N49			RIGID	None	None	RIGID	Typical
34	U1	N50	N51			Mount Pipe	Column	Pipe	A500 Gr.46	Typical

**Hot Rolled Steel Properties**

	Label	E [psi]	G [psi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	2.9e+7	1.115...	.3	.65	.49	36	1.5	58	1.2
2	A529 Gr.50	2.9e+7	1.115...	.3	.65	.49	50	1.1	65	1.1
3	A992	2.9e+7	1.115...	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	2.9e+7	1.115...	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	2.9e+7	1.115...	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr B	2.9e+7	1.115...	.3	.65	.49	35	1.5	58	1.2

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE 2.5	Beam	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
2	Standoff Arms	PIPE 1.5	Beam	Pipe	A500 Gr.46	Typical	.749	.293	.293	.586
3	Diagonal	0.625" S.R.	VBrace	BAR	A529 Gr.50	Typical	.307	.007	.007	.015
4	Mount Pipe	PIPE 2.5	Column	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
5	Tieback	PIPE 2.0	Beam	Pipe	A500 Gr.46	Typical	1.02	.627	.627	1.25
6	Standoff Vertical	0.625" S.R.	VBrace	BAR	A529 Gr.50	Typical	.307	.007	.007	.015



**Joint Coordinates and Temperatures**

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	0	-13.718672	70.318672	0	
2	N2	29.981328	-13.718672	100.3	0	
3	N3	24.890159	-13.718672	95.208831	0	
4	N4	5.091169	-13.718672	75.409841	0	
5	N6	0	-42.018672	70.318672	0	
6	N7	29.981328	-42.018672	100.3	0	
7	N8	24.890159	-42.018672	95.208831	0	
8	N9	5.091169	-42.018672	75.409841	0	
9	N10	-29.981328	-13.718672	100.3	0	
10	N11	-24.890159	-13.718672	95.208831	0	
11	N12	-5.091169	-13.718672	75.409841	0	
12	N14	-29.981328	-42.018672	100.3	0	
13	N15	-24.890159	-42.018672	95.208831	0	
14	N16	-5.091169	-42.018672	75.409841	0	
15	N15A	48	-13.718672	103.3	0	
16	N16A	-48	-13.718672	103.3	0	
17	N17	48	-42.018672	103.3	0	
18	N18	-48	-42.018672	103.3	0	
19	N19	45	19.281328	106.3	0	
20	N20	45	-76.718672	106.3	0	
21	N21	-45	19.281328	106.3	0	
22	N22	-45	-76.718672	106.3	0	
23	N25	-45	-13.718672	103.3	0	
24	N26	45	-13.718672	103.3	0	
25	N27	-45	-42.018672	103.3	0	
26	N28	45	-42.018672	103.3	0	
27	N33	0	19.281328	106.3	0	
28	N34	0	-76.718672	106.3	0	
29	N35	0	-13.718672	103.3	0	
30	N36	0	-42.018672	103.3	0	
31	N37	-33	-13.718672	100.3	0	
32	N38	-40	-13.718672	-16.7	0	
33	N67	-45	-13.718672	106.3	0	
34	N68	45	-13.718672	106.3	0	
35	N69	-45	-42.018672	106.3	0	
36	N70	45	-42.018672	106.3	0	
37	N73	0	-13.718672	106.3	0	
38	N74	0	-42.018672	106.3	0	
39	N42	0	-13.718672	67.318672	0	
40	N43	0	-42.018672	67.318672	0	
41	N41	-33	-13.718672	103.3	0	
42	N42A	29.981328	-13.718672	103.3	0	
43	N43A	29.981328	-42.018672	103.3	0	
44	N44	-29.981328	-13.718672	103.3	0	
45	N45	-29.981328	-42.018672	103.3	0	
46	N46	-14.990664	-13.718672	85.309336	0	
47	N47	-14.990664	-42.018672	85.309336	0	
48	N48	-17.200664	-13.718672	83.099336	0	
49	N49	-17.200664	-42.018672	83.099336	0	
50	N50	-17.200664	-9.718672	83.099336	0	
51	N51	-17.200664	-45.718672	83.099336	0	

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length...	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torque[i...	Kyy	Kzz	Cb	Funct...
1	SA2	Standoff ...	42.4			Lbyy						Lateral
2	SA1	Standoff ...	42.4			Lbyy						Lateral
3	VB1	Standoff ...	28.3			Lbyy			.65	.65		Lateral
4	VB2	Standoff ...	28.3			Lbyy			.65	.65		Lateral
5	DIAG1	Diagonal	39.811			Lbyy			.7	.7		Lateral
6	DIAG2	Diagonal	39.811			Lbyy			.5	.5		Lateral
7	SA4	Standoff ...	42.4			Lbyy						Lateral
8	SA3	Standoff ...	42.4			Lbyy						Lateral
9	VB3	Standoff ...	28.3			Lbyy			.65	.65		Lateral
10	VB4	Standoff ...	28.3			Lbyy			.65	.65		Lateral
11	DIAG3	Diagonal	39.811			Lbyy			.7	.7		Lateral
12	DIAG4	Diagonal	39.811			Lbyy			.5	.5		Lateral
13	HOR2	Face Hori...	96	Segment	Segment	Segment	Segment	Segment				Lateral
14	HOR1	Face Hori...	96			Lbyy						Lateral
15	MP3	Mount Pipe	96			Lbyy						Lateral
16	MP1	Mount Pipe	96			Lbyy						Lateral
17	MP2	Mount Pipe	96			Lbyy						Lateral
18	TB	Tieback	117.209									Lateral
19	U1	Mount Pipe	36									Lateral

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Member)	Surface(Plate/Wall)
1	Self Weight	DL		-1			5			
2	Wind Load AZI 0	WLZ					10			
3	Wind Load AZI 30	None					10			
4	Wind Load AZI 60	None					10			
5	Wind Load AZI 90	WLX					10			
6	Wind Load AZI 120	None					10			
7	Wind Load AZI 150	None					10			
8	Wind Load AZI 180	None					10			
9	Wind Load AZI 210	None					10			
10	Wind Load AZI 240	None					10			
11	Wind Load AZI 270	None					10			
12	Wind Load AZI 300	None					10			
13	Wind Load AZI 330	None					10			
14	Distr. Wind Load Z	WLZ						34		
15	Distr. Wind Load X	WLX						34		
16	Ice Weight	OL1					5	34		
17	Ice Wind Load AZI 0	OL2					10			
18	Ice Wind Load AZI 30	None					10			
19	Ice Wind Load AZI 60	None					10			
20	Ice Wind Load AZI 90	OL3					10			
21	Ice Wind Load AZI 120	None					10			
22	Ice Wind Load AZI 150	None					10			
23	Ice Wind Load AZI 180	None					10			
24	Ice Wind Load AZI 210	None					10			
25	Ice Wind Load AZI 240	None					10			
26	Ice Wind Load AZI 270	None					10			
27	Ice Wind Load AZI 300	None					10			
28	Ice Wind Load AZI 330	None					10			
29	Distr. Ice Wind Load Z	OL2						34		
30	Distr. Ice Wind Load X	OL3						34		
31	Seismic Load Z	ELZ			-298		5			
32	Seismic Load X	ELX	-298				5			

**Basic Load Cases (Continued)**

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Member)	Surface(Plate/Wall)
33 Service Live Loads	LL				1				
34 Maintenance Load 1	LL				1				
35 Maintenance Load 2	LL				1				
36 Maintenance Load 3	LL				1				

**Joint Loads and Enforced Displacements (BLC 33 : Service Live Loads)**

Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...]
1 N17	L	Y	-250

**Joint Loads and Enforced Displacements (BLC 34 : Maintenance Load 1)**

Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...]
1 N27	L	Y	-500

**Joint Loads and Enforced Displacements (BLC 35 : Maintenance Load 2)**

Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...]
1 N28	L	Y	-500

**Joint Loads and Enforced Displacements (BLC 36 : Maintenance Load 3)**

Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...]
1 N36	L	Y	-500

**Member Point Loads (BLC 1 : Self Weight)**

Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1 MP2	Y	-32.25	12
2 MP2	Y	-32.25	84
3 MP2	Y	-63.9	%50
4 MP2	Y	-74.95	%50
5 U1	Y	-21.82	%50

**Member Point Loads (BLC 2 : Wind Load AZI 0)**

Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1 MP2	X	0	12
2 MP2	Z	-187.25	12
3 MP2	X	0	84
4 MP2	Z	-187.25	84
5 MP2	X	0	%50
6 MP2	Z	-91.14	%50
7 MP2	X	0	%50
8 MP2	Z	-91.14	%50
9 U1	X	0	%50
10 U1	Z	-106.41	%50

**Member Point Loads (BLC 3 : Wind Load AZI 30)**

Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1 MP2	X	-79.6	12
2 MP2	Z	-137.87	12
3 MP2	X	-79.6	84
4 MP2	Z	-137.87	84
5 MP2	X	-39.84	%50
6 MP2	Z	-69	%50
7 MP2	X	-40.71	%50

**Member Point Loads (BLC 3 : Wind Load AZI 30) (Continued)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
8	MP2	Z	-70.51	%50
9	U1	X	-47.44	%50
10	U1	Z	-82.17	%50

**Member Point Loads (BLC 4 : Wind Load AZI 60)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-89.28	12
2	MP2	Z	-51.55	12
3	MP2	X	-89.28	84
4	MP2	Z	-51.55	84
5	MP2	X	-49.14	%50
6	MP2	Z	-28.37	%50
7	MP2	X	-53.67	%50
8	MP2	Z	-30.99	%50
9	U1	X	-62.18	%50
10	U1	Z	-35.9	%50

**Member Point Loads (BLC 5 : Wind Load AZI 90)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-75.04	12
2	MP2	Z	0	12
3	MP2	X	-75.04	84
4	MP2	Z	0	84
5	MP2	X	-45.28	%50
6	MP2	Z	0	%50
7	MP2	X	-52.25	%50
8	MP2	Z	0	%50
9	U1	X	-60.27	%50
10	U1	Z	0	%50

**Member Point Loads (BLC 6 : Wind Load AZI 120)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-89.28	12
2	MP2	Z	51.55	12
3	MP2	X	-89.28	84
4	MP2	Z	51.55	84
5	MP2	X	-49.14	%50
6	MP2	Z	28.37	%50
7	MP2	X	-53.67	%50
8	MP2	Z	30.99	%50
9	U1	X	-62.18	%50
10	U1	Z	35.9	%50

**Member Point Loads (BLC 7 : Wind Load AZI 150)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-79.6	12
2	MP2	Z	137.87	12
3	MP2	X	-79.6	84
4	MP2	Z	137.87	84
5	MP2	X	-39.84	%50
6	MP2	Z	69	%50
7	MP2	X	-40.71	%50
8	MP2	Z	70.51	%50
9	U1	X	-47.44	%50
10	U1	Z	82.17	%50

**Member Point Loads (BLC 8 : Wind Load AZI 180)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	0	12
2	MP2	Z	187.25	12
3	MP2	X	0	84
4	MP2	Z	187.25	84
5	MP2	X	0	%50
6	MP2	Z	91.14	%50
7	MP2	X	0	%50
8	MP2	Z	91.14	%50
9	U1	X	0	%50
10	U1	Z	106.41	%50

**Member Point Loads (BLC 9 : Wind Load AZI 210)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	79.6	12
2	MP2	Z	137.87	12
3	MP2	X	79.6	84
4	MP2	Z	137.87	84
5	MP2	X	39.84	%50
6	MP2	Z	69	%50
7	MP2	X	40.71	%50
8	MP2	Z	70.51	%50
9	U1	X	47.44	%50
10	U1	Z	82.17	%50

**Member Point Loads (BLC 10 : Wind Load AZI 240)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	89.28	12
2	MP2	Z	51.55	12
3	MP2	X	89.28	84
4	MP2	Z	51.55	84
5	MP2	X	49.14	%50
6	MP2	Z	28.37	%50
7	MP2	X	53.67	%50
8	MP2	Z	30.99	%50
9	U1	X	62.18	%50
10	U1	Z	35.9	%50

**Member Point Loads (BLC 11 : Wind Load AZI 270)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	75.04	12
2	MP2	Z	0	12
3	MP2	X	75.04	84
4	MP2	Z	0	84
5	MP2	X	45.28	%50
6	MP2	Z	0	%50
7	MP2	X	52.25	%50
8	MP2	Z	0	%50
9	U1	X	60.27	%50
10	U1	Z	0	%50

**Member Point Loads (BLC 12 : Wind Load AZI 300)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	89.28	12
2	MP2	Z	-51.55	12
3	MP2	X	89.28	84

**Member Point Loads (BLC 12 : Wind Load AZI 300) (Continued)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
4	MP2	Z	-51.55	84
5	MP2	X	49.14	%50
6	MP2	Z	-28.37	%50
7	MP2	X	53.67	%50
8	MP2	Z	-30.99	%50
9	U1	X	62.18	%50
10	U1	Z	-35.9	%50

**Member Point Loads (BLC 13 : Wind Load AZI 330)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	79.6	12
2	MP2	Z	-137.87	12
3	MP2	X	79.6	84
4	MP2	Z	-137.87	84
5	MP2	X	39.84	%50
6	MP2	Z	-69	%50
7	MP2	X	40.71	%50
8	MP2	Z	-70.51	%50
9	U1	X	47.44	%50
10	U1	Z	-82.17	%50

**Member Point Loads (BLC 16 : Ice Weight)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	Y	-150.195	12
2	MP2	Y	-150.195	84
3	MP2	Y	-73.587	%50
4	MP2	Y	-78.421	%50
5	U1	Y	-83.45	%50

**Member Point Loads (BLC 17 : Ice Wind Load AZI 0)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	0	12
2	MP2	Z	-25.54	12
3	MP2	X	0	84
4	MP2	Z	-25.54	84
5	MP2	X	0	%50
6	MP2	Z	-9.93	%50
7	MP2	X	0	%50
8	MP2	Z	-9.93	%50
9	U1	X	0	%50
10	U1	Z	-11.3	%50

**Member Point Loads (BLC 18 : Ice Wind Load AZI 30)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	-11.61	12
2	MP2	Z	-20.1	12
3	MP2	X	-11.61	84
4	MP2	Z	-20.1	84
5	MP2	X	-4.58	%50
6	MP2	Z	-7.93	%50
7	MP2	X	-4.62	%50
8	MP2	Z	-8	%50
9	U1	X	-5.29	%50
10	U1	Z	-9.16	%50

**Member Point Loads (BLC 19 : Ice Wind Load AZI 60)**

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in, %]
1	MP2	X	-16.06	12
2	MP2	Z	-9.27	12
3	MP2	X	-16.06	84
4	MP2	Z	-9.27	84
5	MP2	X	-6.57	%50
6	MP2	Z	-3.8	%50
7	MP2	X	-6.81	%50
8	MP2	Z	-3.93	%50
9	U1	X	-7.93	%50
10	U1	Z	-4.58	%50

**Member Point Loads (BLC 20 : Ice Wind Load AZI 90)**

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in, %]
1	MP2	X	-16.21	12
2	MP2	Z	0	12
3	MP2	X	-16.21	84
4	MP2	Z	0	84
5	MP2	X	-6.81	%50
6	MP2	Z	0	%50
7	MP2	X	-7.17	%50
8	MP2	Z	0	%50
9	U1	X	-8.44	%50
10	U1	Z	0	%50

**Member Point Loads (BLC 21 : Ice Wind Load AZI 120)**

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in, %]
1	MP2	X	-16.06	12
2	MP2	Z	9.27	12
3	MP2	X	-16.06	84
4	MP2	Z	9.27	84
5	MP2	X	-6.57	%50
6	MP2	Z	3.8	%50
7	MP2	X	-6.81	%50
8	MP2	Z	3.93	%50
9	U1	X	-7.93	%50
10	U1	Z	4.58	%50

**Member Point Loads (BLC 22 : Ice Wind Load AZI 150)**

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in, %]
1	MP2	X	-11.61	12
2	MP2	Z	20.1	12
3	MP2	X	-11.61	84
4	MP2	Z	20.1	84
5	MP2	X	-4.58	%50
6	MP2	Z	7.93	%50
7	MP2	X	-4.62	%50
8	MP2	Z	8	%50
9	U1	X	-5.29	%50
10	U1	Z	9.16	%50

**Member Point Loads (BLC 23 : Ice Wind Load AZI 180)**

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in, %]
1	MP2	X	0	12
2	MP2	Z	25.54	12
3	MP2	X	0	84

**Member Point Loads (BLC 23 : Ice Wind Load AZI 180) (Continued)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
4	MP2	Z	25.54	84
5	MP2	X	0	%50
6	MP2	Z	9.93	%50
7	MP2	X	0	%50
8	MP2	Z	9.93	%50
9	U1	X	0	%50
10	U1	Z	11.3	%50

**Member Point Loads (BLC 24 : Ice Wind Load AZI 210)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	11.61	12
2	MP2	Z	20.1	12
3	MP2	X	11.61	84
4	MP2	Z	20.1	84
5	MP2	X	4.58	%50
6	MP2	Z	7.93	%50
7	MP2	X	4.62	%50
8	MP2	Z	8	%50
9	U1	X	5.29	%50
10	U1	Z	9.16	%50

**Member Point Loads (BLC 25 : Ice Wind Load AZI 240)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	16.06	12
2	MP2	Z	9.27	12
3	MP2	X	16.06	84
4	MP2	Z	9.27	84
5	MP2	X	6.57	%50
6	MP2	Z	3.8	%50
7	MP2	X	6.81	%50
8	MP2	Z	3.93	%50
9	U1	X	7.93	%50
10	U1	Z	4.58	%50

**Member Point Loads (BLC 26 : Ice Wind Load AZI 270)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	16.21	12
2	MP2	Z	0	12
3	MP2	X	16.21	84
4	MP2	Z	0	84
5	MP2	X	6.81	%50
6	MP2	Z	0	%50
7	MP2	X	7.17	%50
8	MP2	Z	0	%50
9	U1	X	8.44	%50
10	U1	Z	0	%50

**Member Point Loads (BLC 27 : Ice Wind Load AZI 300)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	16.06	12
2	MP2	Z	-9.27	12
3	MP2	X	16.06	84
4	MP2	Z	-9.27	84
5	MP2	X	6.57	%50
6	MP2	Z	-3.8	%50



**Member Point Loads (BLC 27 : Ice Wind Load AZI 300) (Continued)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
7	MP2	X	6.81	%50
8	MP2	Z	-3.93	%50
9	U1	X	7.93	%50
10	U1	Z	-4.58	%50

**Member Point Loads (BLC 28 : Ice Wind Load AZI 330)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	11.61	12
2	MP2	Z	-20.1	12
3	MP2	X	11.61	84
4	MP2	Z	-20.1	84
5	MP2	X	4.58	%50
6	MP2	Z	-7.93	%50
7	MP2	X	4.62	%50
8	MP2	Z	-8	%50
9	U1	X	5.29	%50
10	U1	Z	-9.16	%50

**Member Point Loads (BLC 31 : Seismic Load Z)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	Z	-9.598	12
2	MP2	Z	-9.598	84
3	MP2	Z	-19.017	%50
4	MP2	Z	-22.305	%50
5	U1	Z	-6.494	%50

**Member Point Loads (BLC 32 : Seismic Load X)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	-9.598	12
2	MP2	X	-9.598	84
3	MP2	X	-19.017	%50
4	MP2	X	-22.305	%50
5	U1	X	-6.494	%50

**Member Distributed Loads (BLC 14 : Distr. Wind Load Z)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in, %]	End Location[in, %]
1	SA2	SZ	-62.339	-62.339	0	%100
2	SA1	SZ	-62.339	-62.339	0	%100
3	VB1	SZ	-62.339	-62.339	0	%100
4	VB2	SZ	-62.339	-62.339	0	%100
5	DIAG1	SZ	-62.339	-62.339	0	%100
6	DIAG2	SZ	-62.339	-62.339	0	%100
7	SA4	SZ	-62.339	-62.339	0	%100
8	SA3	SZ	-62.339	-62.339	0	%100
9	VB3	SZ	-62.339	-62.339	0	%100
10	VB4	SZ	-62.339	-62.339	0	%100
11	DIAG3	SZ	-62.339	-62.339	0	%100
12	DIAG4	SZ	-62.339	-62.339	0	%100
13	HOR2	SZ	-62.339	-62.339	0	%100
14	HOR1	SZ	-62.339	-62.339	0	%100
15	MP3	SZ	-62.339	-62.339	0	%100
16	MP1	SZ	-62.339	-62.339	0	%100
17	MP2	SZ	-62.339	-62.339	0	%100
18	TB	SZ	-62.339	-62.339	0	%100

**Member Distributed Loads (BLC 14 : Distr. Wind Load Z) (Continued)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	M27	SZ	0	0	0	%100
28	M28	SZ	0	0	0	%100
29	M29A	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31	SZ	0	0	0	%100
32	M32	SZ	0	0	0	%100
33	M33A	SZ	0	0	0	%100
34	U1	SZ	-62.339	-62.339	0	%100

**Member Distributed Loads (BLC 15 : Distr. Wind Load X)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	SA2	SX	-62.339	-62.339	0	%100
2	SA1	SX	-62.339	-62.339	0	%100
3	VB1	SX	-62.339	-62.339	0	%100
4	VB2	SX	-62.339	-62.339	0	%100
5	DIAG1	SX	-62.339	-62.339	0	%100
6	DIAG2	SX	-62.339	-62.339	0	%100
7	SA4	SX	-62.339	-62.339	0	%100
8	SA3	SX	-62.339	-62.339	0	%100
9	VB3	SX	-62.339	-62.339	0	%100
10	VB4	SX	-62.339	-62.339	0	%100
11	DIAG3	SX	-62.339	-62.339	0	%100
12	DIAG4	SX	-62.339	-62.339	0	%100
13	HOR2	SX	-62.339	-62.339	0	%100
14	HOR1	SX	-62.339	-62.339	0	%100
15	MP3	SX	-62.339	-62.339	0	%100
16	MP1	SX	-62.339	-62.339	0	%100
17	MP2	SX	-62.339	-62.339	0	%100
18	TB	SX	-62.339	-62.339	0	%100
19	M29	SX	0	0	0	%100
20	M30	SX	0	0	0	%100
21	M33	SX	0	0	0	%100
22	M34	SX	0	0	0	%100
23	M35	SX	0	0	0	%100
24	M36	SX	0	0	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	M27	SX	0	0	0	%100
28	M28	SX	0	0	0	%100
29	M29A	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31	SX	0	0	0	%100
32	M32	SX	0	0	0	%100
33	M33A	SX	0	0	0	%100
34	U1	SX	-62.339	-62.339	0	%100

**Member Distributed Loads (BLC 16 : Ice Weight)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
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**Member Distributed Loads (BLC 16 : Ice Weight) (Continued)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	SA2	Y	-8.243	-8.243	0	%100
2	SA1	Y	-8.243	-8.243	0	%100
3	VB1	Y	-5.415	-5.415	0	%100
4	VB2	Y	-5.415	-5.415	0	%100
5	DIAG1	Y	-5.415	-5.415	0	%100
6	DIAG2	Y	-5.415	-5.415	0	%100
7	SA4	Y	-8.243	-8.243	0	%100
8	SA3	Y	-8.243	-8.243	0	%100
9	VB3	Y	-5.415	-5.415	0	%100
10	VB4	Y	-5.415	-5.415	0	%100
11	DIAG3	Y	-5.415	-5.415	0	%100
12	DIAG4	Y	-5.415	-5.415	0	%100
13	HOR2	Y	-10.406	-10.406	0	%100
14	HOR1	Y	-10.406	-10.406	0	%100
15	MP3	Y	-10.406	-10.406	0	%100
16	MP1	Y	-10.406	-10.406	0	%100
17	MP2	Y	-10.406	-10.406	0	%100
18	TB	Y	-9.297	-9.297	0	%100
19	M29	Y	-4.028	-4.028	0	%100
20	M30	Y	-4.028	-4.028	0	%100
21	M33	Y	-4.028	-4.028	0	%100
22	M34	Y	-4.028	-4.028	0	%100
23	M35	Y	-4.028	-4.028	0	%100
24	M36	Y	-4.028	-4.028	0	%100
25	M25	Y	-4.028	-4.028	0	%100
26	M26	Y	-4.028	-4.028	0	%100
27	M27	Y	-4.028	-4.028	0	%100
28	M28	Y	-4.028	-4.028	0	%100
29	M29A	Y	-4.028	-4.028	0	%100
30	M30A	Y	-4.028	-4.028	0	%100
31	M31	Y	-4.028	-4.028	0	%100
32	M32	Y	-4.028	-4.028	0	%100
33	M33A	Y	-4.028	-4.028	0	%100
34	U1	Y	-10.406	-10.406	0	%100

**Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z)**

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	SA2	SZ	-30.99	-30.99	0	%100
2	SA1	SZ	-30.99	-30.99	0	%100
3	VB1	SZ	-72.496	-72.496	0	%100
4	VB2	SZ	-72.496	-72.496	0	%100
5	DIAG1	SZ	-72.496	-72.496	0	%100
6	DIAG2	SZ	-72.496	-72.496	0	%100
7	SA4	SZ	-30.99	-30.99	0	%100
8	SA3	SZ	-30.99	-30.99	0	%100
9	VB3	SZ	-72.496	-72.496	0	%100
10	VB4	SZ	-72.496	-72.496	0	%100
11	DIAG3	SZ	-72.496	-72.496	0	%100
12	DIAG4	SZ	-72.496	-72.496	0	%100
13	HOR2	SZ	-24.09	-24.09	0	%100
14	HOR1	SZ	-24.09	-24.09	0	%100
15	MP3	SZ	-24.09	-24.09	0	%100
16	MP1	SZ	-24.09	-24.09	0	%100
17	MP2	SZ	-24.09	-24.09	0	%100
18	TB	SZ	-26.921	-26.921	0	%100
19	M29	SZ	0	0	0	%100

**Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)**

	Member Label	Direction	Start Magnitude[lb/ft....	End Magnitude[lb/ft.F...	Start Location[in, %]	End Location[in, %]
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	M27	SZ	0	0	0	%100
28	M28	SZ	0	0	0	%100
29	M29A	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31	SZ	0	0	0	%100
32	M32	SZ	0	0	0	%100
33	M33A	SZ	0	0	0	%100
34	U1	SZ	-24.09	-24.09	0	%100

**Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X)**

	Member Label	Direction	Start Magnitude[lb/ft....	End Magnitude[lb/ft.F...	Start Location[in, %]	End Location[in, %]
1	SA2	SX	-30.99	-30.99	0	%100
2	SA1	SX	-30.99	-30.99	0	%100
3	VB1	SX	-72.496	-72.496	0	%100
4	VB2	SX	-72.496	-72.496	0	%100
5	DIAG1	SX	-72.496	-72.496	0	%100
6	DIAG2	SX	-72.496	-72.496	0	%100
7	SA4	SX	-30.99	-30.99	0	%100
8	SA3	SX	-30.99	-30.99	0	%100
9	VB3	SX	-72.496	-72.496	0	%100
10	VB4	SX	-72.496	-72.496	0	%100
11	DIAG3	SX	-72.496	-72.496	0	%100
12	DIAG4	SX	-72.496	-72.496	0	%100
13	HOR2	SX	-24.09	-24.09	0	%100
14	HOR1	SX	-24.09	-24.09	0	%100
15	MP3	SX	-24.09	-24.09	0	%100
16	MP1	SX	-24.09	-24.09	0	%100
17	MP2	SX	-24.09	-24.09	0	%100
18	TB	SX	-26.921	-26.921	0	%100
19	M29	SX	0	0	0	%100
20	M30	SX	0	0	0	%100
21	M33	SX	0	0	0	%100
22	M34	SX	0	0	0	%100
23	M35	SX	0	0	0	%100
24	M36	SX	0	0	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	M27	SX	0	0	0	%100
28	M28	SX	0	0	0	%100
29	M29A	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31	SX	0	0	0	%100
32	M32	SX	0	0	0	%100
33	M33A	SX	0	0	0	%100
34	U1	SX	-24.09	-24.09	0	%100





**Envelope Joint Reactions**

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-...]	LC	MZ [lb-ft]	LC
1 N38 ...	110.664	17	65.807	36	845.91	5	0	110	0	110	0	110
2 ...	-110.863	23	14.576	54	-846.372	11	0	1	0	1	0	1
3 N42 ...	1078.67	79	969.894	32	606.789	25	-130.025	24	0	110	196.188	90
4 ...	-1003.915	97	229.406	61	-2113.539	31	-572.839	31	0	1	-230.869	84
5 N43 ...	999.923	91	966.512	38	1994.551	27	-133.768	21	0	110	198.42	91
6 ...	-1074.58	85	229.343	55	-292.536	20	-570.949	27	0	1	-231.241	85
7 Totals: ...	960.535	5	1994.018	29	1472.352	2						
8 ...	-960.535	11	476.948	59	-1472.351	20						

**Envelope AISC 15th(360-16): LRFD Steel Code Checks**

Member	Shape	Code Check	Loc[in]	LC	Shear...Loc...Dir	LC	phi*Pnc...	phi*Pnt...	phi*Mn...	phi*Mn...Cb	Eqn
1 DIAG4	0.625" S.R.	.275	20.32	85	.007 0	9	3991.156	13815	134.4	134.4	1... H1-1a
2 SA3	PIPE 1.5	.263	42.4	87	.099 42.4	86	22762....	31008.6	1452.45	1452.45	2... H1-1b
3 DIAG2	0.625" S.R.	.256	20.32	89	.005 39.8...	7	3991.156	13815	134.4	134.4	1... H1-1a
4 SA4	PIPE 1.5	.252	42.4	81	.098 42.4	84	22762....	31008.6	1452.45	1452.45	2... H1-1b
5 SA1	PIPE 1.5	.240	42.4	89	.073 7.067	93	22762....	31008.6	1452.45	1452.45	2... H1-1b
6 SA2	PIPE 1.5	.228	42.4	94	.068 42.4	90	22762....	31008.6	1452.45	1452.45	2... H1-1b
7 TB	PIPE 2.0	.104	58.605	5	.006 117...	36	10310....	42228	2459.85	2459.85	1... H1-1b
8 HOR1	PIPE 2.5	.097	48	102	.083 78	90	33487....	66654	4726.5	4726.5	1... H1-1b
9 DIAG3	0.625" S.R.	.095	19.905	37	.006 0	3	2036.304	13815	134.4	134.4	1... H1-1b
10 MP1	PIPE 2.5	.092	63	95	.022 35	90	33487....	66654	4726.5	4726.5	4... H1-1b
11 MP3	PIPE 2.5	.092	63	80	.020 63	79	33487....	66654	4726.5	4726.5	4... H1-1b
12 DIAG1	0.625" S.R.	.090	19.905	29	.004 39.8...	13	2036.304	13815	134.4	134.4	1... H1-1b
13 HOR2	PIPE 2.5	.089	48	103	.066 78	90	62325....	66654	4726.5	4726.5	2... H1-1b
14 MP2	PIPE 2.5	.086	34	8	.020 63	10	33487....	66654	4726.5	4726.5	4... H1-1b
15 VB3	0.625" S.R.	.025	14.15	3	.003 0	4	4673.458	13815	134.4	134.4	1 H1-1b
16 VB4	0.625" S.R.	.022	14.15	19	.010 0	90	4673.458	13815	134.4	134.4	1 H1-1b
17 VB2	0.625" S.R.	.022	14.15	20	.012 0	84	4673.458	13815	134.4	134.4	1 H1-1b
18 VB1	0.625" S.R.	.021	14.15	14	.004 0	78	4673.458	13815	134.4	134.4	1 H1-1b
19 U1	PIPE 2.5	.015	4.125	85	.010 4.125	4	60504....	66654	4726.5	4726.5	2... H1-1b

**Material Takeoff**

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		15	45.3	0
3	Total General		15	45.3	0
4					
5	Hot Rolled Steel				
6	A500 Gr.46	PIPE 1.5	4	169.6	.036
7	A500 Gr.46	PIPE 2.5	6	516	.236
8	A500 Gr.46	PIPE 2.0	1	117.2	.034
9	A529 Gr.50	0.625" S.R.	8	272.4	.024
10	Total HR Steel		19	1075.3	.329

## Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOHVN00036A
Site Number:	13729960_D2
Connection Description:	Mount to Tower

MAXIMUM BOLT LOADS		
Bolt Tension:	4493.80	lbs
Bolt Shear:	973.60	lbs

WORST CASE BOLT LOADS <sup>1</sup>		
Bolt Tension:	4493.80	lbs
Bolt Shear:	601.26	lbs

WORST CASE CONNECTION SLIP LOADS <sup>2</sup>		
Sliding Force:	969.63	lbs
Torsion About Leg:	0.00	lbs-ft

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	A307	-
# of Threaded Rods:	2	-
Leg Diameter:	3	in
Threads Excluded?	No	-

<sup>1</sup> Worst case bolt loads correspond to Load combination #31 on member M25 in RISA-3D, which causes the maximum demand on the bolts.

<sup>2</sup> Worst Case slip loads correspond to Load combination #31 on member M25 in RISA 3D, which causes the maximum slip demand on the connection.

Member Information	
J nodes of M25, M26	

BOLT CHECK		
Tensile Strength	10170.07	
Shear Strength	6902.91	
Max Tensile Usage	44.2%	
Max Shear Usage	14.1%	
Interaction Check (Worst Case)	0.20	≤1.05
Result	Pass	

SLIP CHECK (WORST CASE)		
Torsional Slip Resistance	761.87	
Sliding Resistance	6094.98	
Torsional Slip Usage	0.0%	
Sliding Usage	15.9%	
Interaction Check	0.03	≤1.05
Result	Pass	





4

3

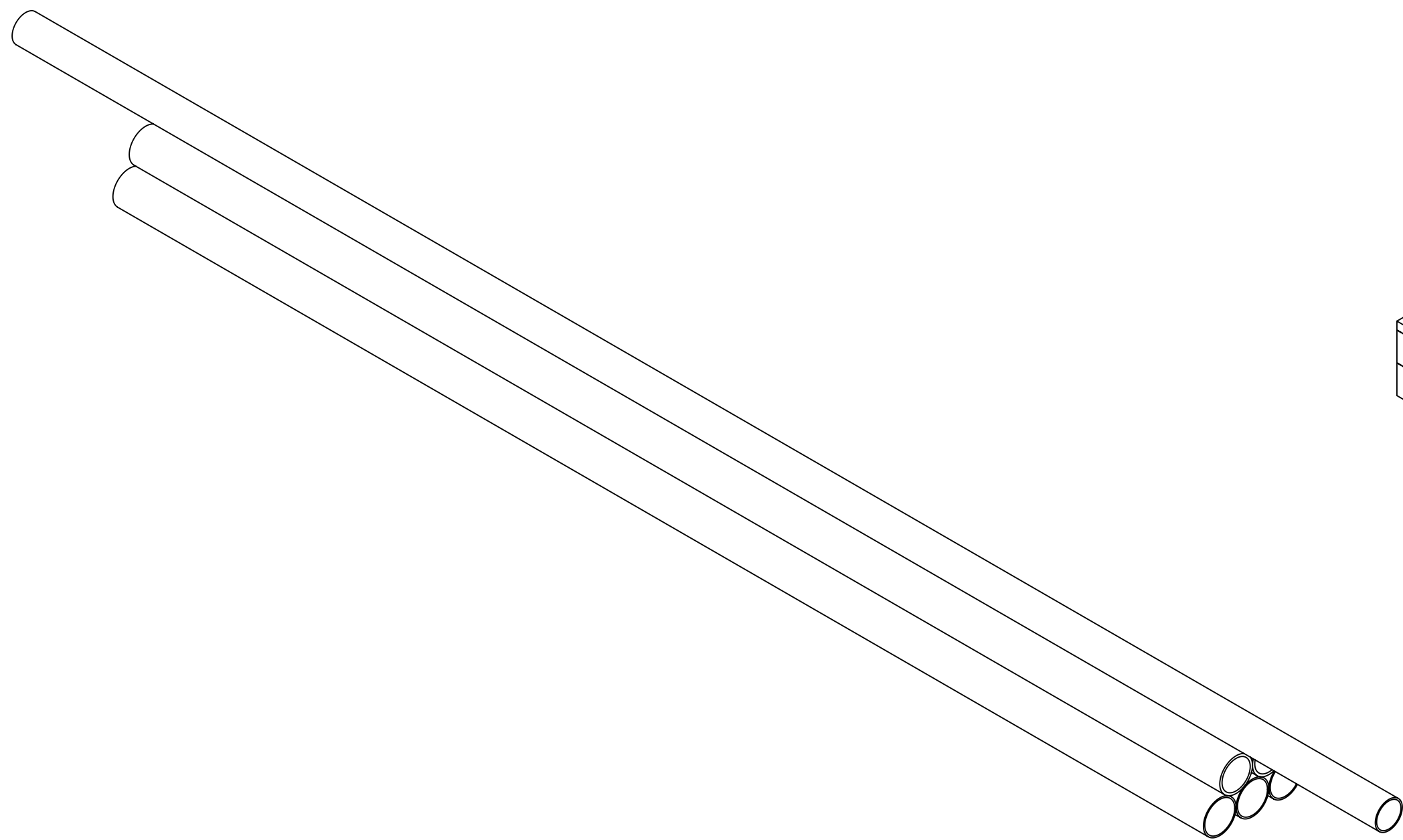
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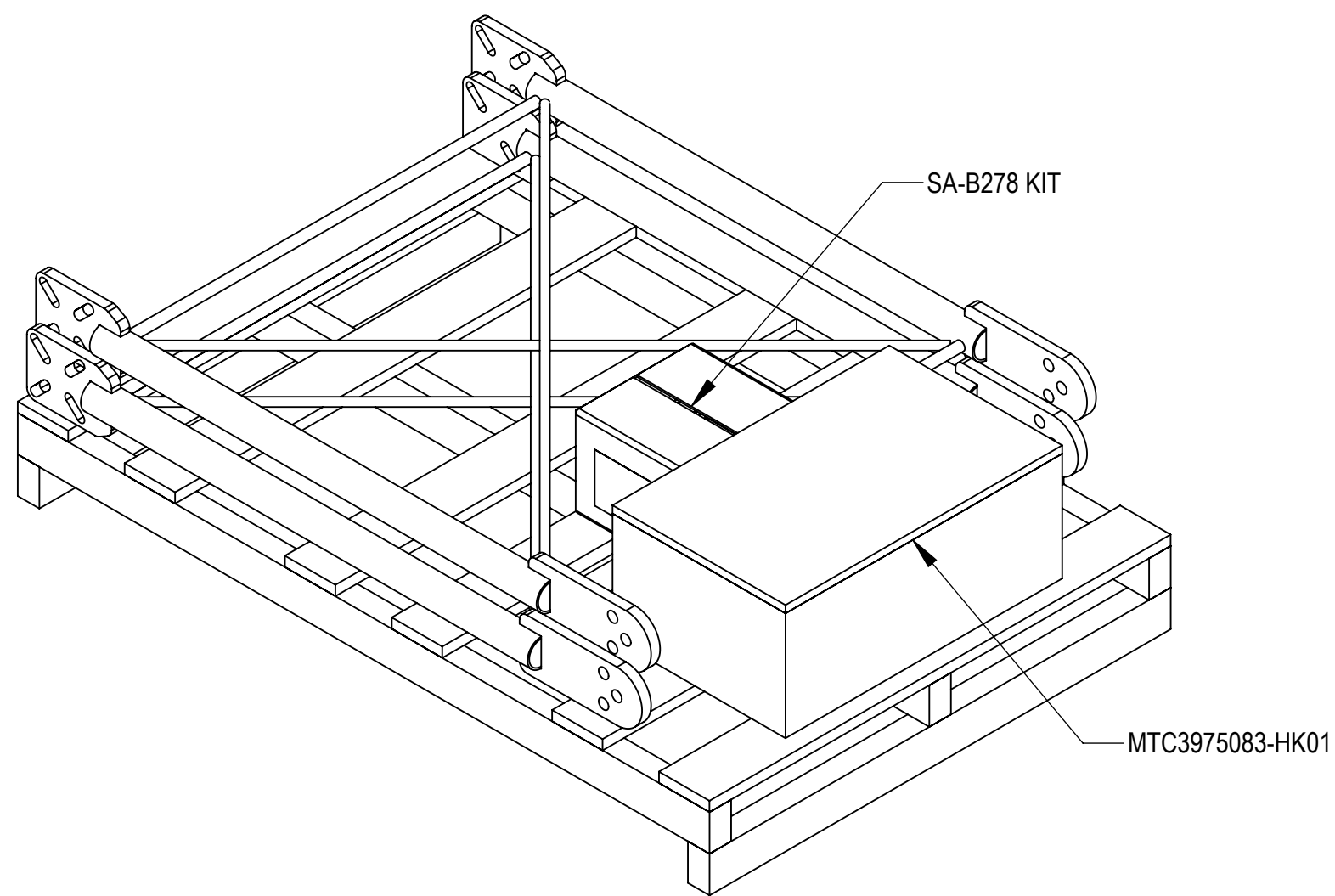
NOTES:

- 1.0 GENERAL
  - 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
  - 1.2 FOR PATENT INFO :<https://www.cs-pat.com>
- 2.0 DESIGN NOTES
  - 2.1 DESIGN SURVIVAL WIND SPEED: 180 MPH, 3 SEC GUST WITH EQUIPMENT MOUNTED AS SHOWN
- 3.0 MANUFACTURING/SPECIAL REQUIREMENTS
  - 3.1 TORQUE HARDWARE ACCORDING TO SIZE AS NOTED BELOW:
    - ALL HARDWARE 1/4" DIAMETER: TORQUE 7 FT-LBS
    - ALL HARDWARE 3/8" DIAMETER: TORQUE 12 FT-LBS
    - ALL HARDWARE 1/2" DIAMETER OR LARGER SHALL BE TIGHTENED SNUG TIGHT, DEFINED AS THE CONDITION OBTAINED WITH A FEW IMPACTS OA AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
- 4.0 TEST
- 5.0 PACKAGING
  - 5.1 PACKAGING SHALL MEET COMMSCOPE REQUIREMENTS PER DOCUMENT IS-PL-3005
  - 5.2 PRINTED DOCUMENT TO BE PLACED INSIDE POLYBAG AND THEN IN SHIPPING CONTAINER
  - 5.3 EXTRA HARDWARE MAY BE SUPPLIED, BAGGED AND SHIPPED.

REVISIONS				
REV.	IPS	DESCRIPTION	BY	DATE
A	10191PC	NEW RELEASED.	RJC	3/17/2021



PB01TEA0308B0208K



MTC3975083-PK01

<b>COMMSCOPE, INC. OF NORTH CAROLINA</b>									
TOLERANCES					SAP MATERIAL MASTER				
0 PLACE X ± .25		2 PLACE .XX ± 0.06			<b>MTC3975083</b>				
1 PLACE .X ± 0.12		ANGLES ± 2°							
FINISH GALV A123					MATERIAL SEE BOM				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y 14.5M-1994	CE	XZ1054	03/02/2021	<b>SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE</b>					
	RW	BCAMPBELLCON	03/17/2021						
	AD	MC1107	03/17/2021						
	RE	BCROSS	03/17/2021						
	ECN	10191PC							
SCALE <b>1:8</b>		DOCUMENT NO. <b>MTC3975083</b>							
SIZE	Auth Group	INSL	MODEL			DRAWING			
C	⊕	◁	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	SHEET
			00	RE	A	00	RE	A	1 OF 7

ITEM	PART NO.	DESCRIPTION	QTY
1	MTC3975083-PK01	PACK KIT, MTC3975083, 1 SCTR, 3 ANT PIPE	1
2	PB01TEA0308B0208K	PIPE BUNDLE	1

DENSITY		lbs/in <sup>3</sup>
MASS	352.136	lbs
VOLUME	2431.173	in <sup>3</sup>
SURFACE AREA	19715.555	in <sup>2</sup>
HEIGHT		
LENGTH		
WIDTH		

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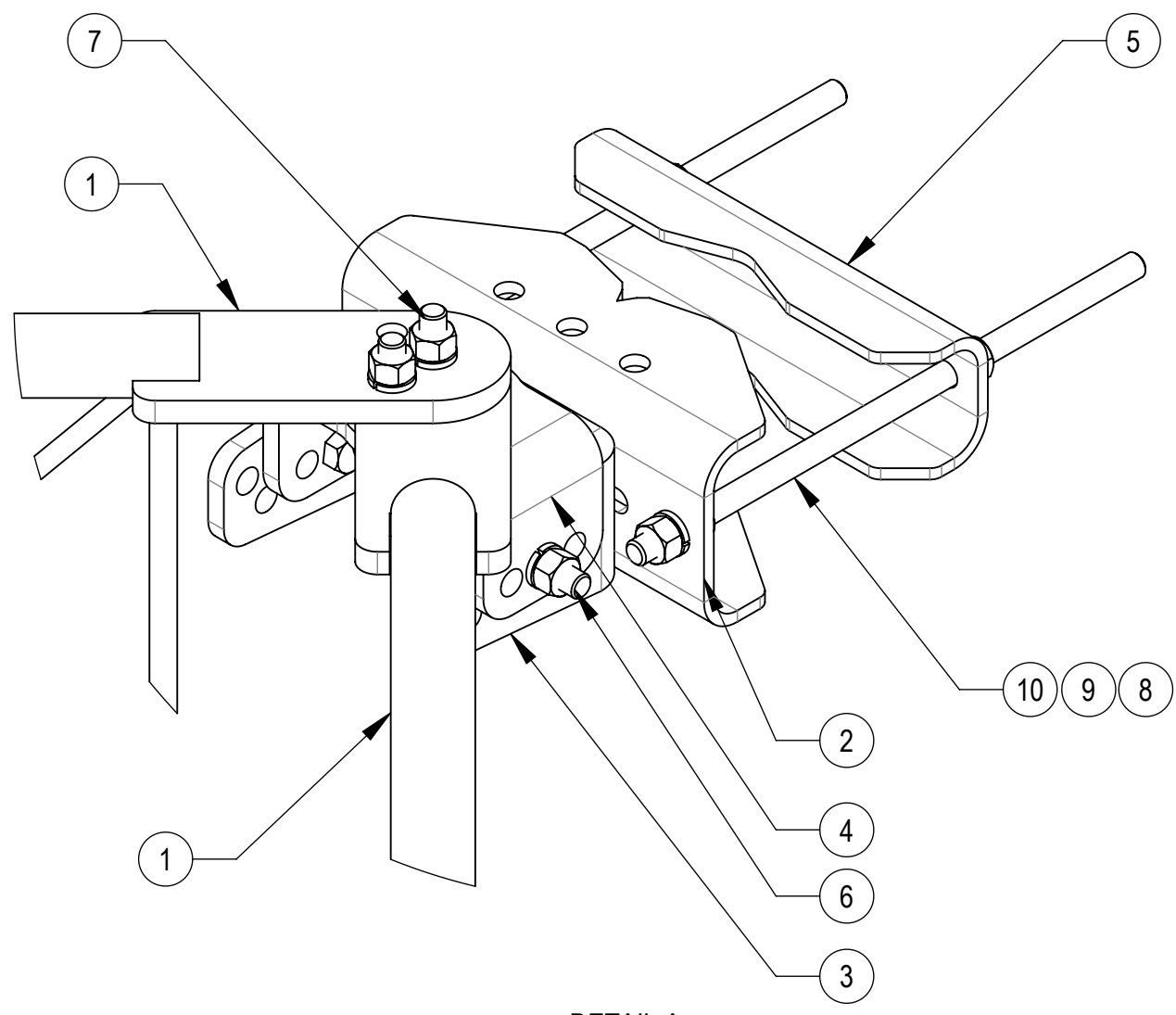
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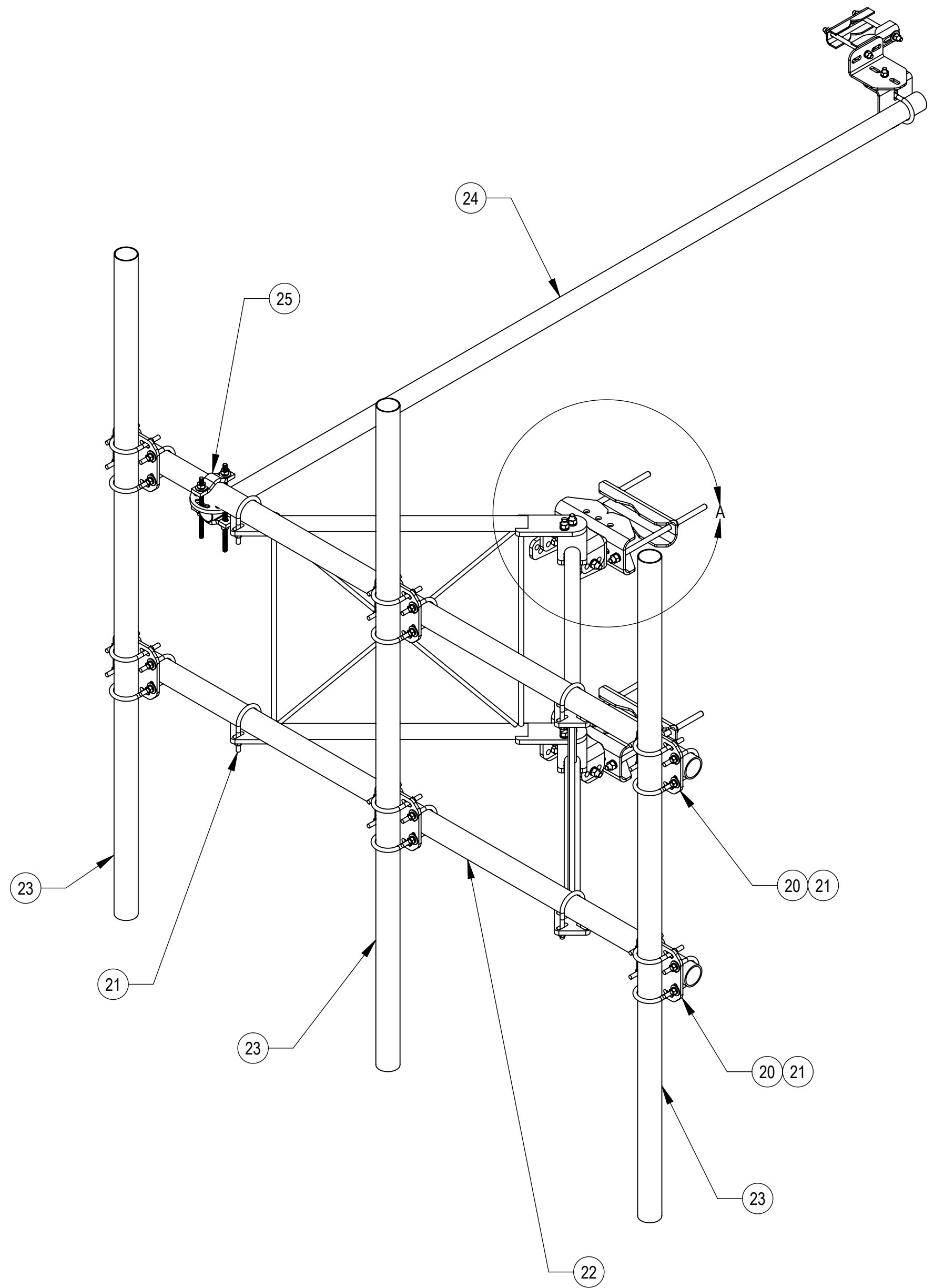
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
NOTES:



DETAIL A  
SCALE 1:4



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	NOTE NO.
1	SFV01	WELDMENT, SF-V STANDOFF ARM	2	
2	MTC397522	CLAMP, FRONT MOUNTING	2	
3	SFV03	SFV TAPER BRACKET	1	
4	SFV02	SFV AZIMUTH BRACKET	3	
5	MTC397521	CLAMP, BACK	2	
6	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	
7	GB-05305	5/8" X 3" GALV BOLT KIT	4	
8	GWL-05	5/8" GALV LOCK WASHER	8	
9	GN-05	5/8" GALV HEX NUT	12	
10	MT-382-16	5/8" X 16" GALV THREADED ROD	4	
11	GWF-05	5/8" GALV FLAT WASHER, 1.7OD	6	
12	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	1	
13	XAU01	ANGLE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	2	
14	SAB01	FORMED CLAMP	2	
15	MT-379-8	1/2" X 8" GALV THREADED ROD	2	
16	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	1	
17	GWF-04	1/2" GALV FLAT WASHER	52	
18	GWL-04	1/2" GALV LOCK WASHER	41	
19	GN-04	1/2" GALV HEX NUT	41	
20	XPU01	PLATE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	6	
21	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	28	
22	MT54696	Ø 2.875" O.D. X 96 PIPE	2	
23	MT54696120	Ø 2.88" X 96" GALV PIPE	3	
24	MT-651-120	2.375" OD X 120" PIPE	1	
25	XP-R	CROSSOVER PLATE, ROUND, UP TO 3.5" OD	1	

COMMSCOPE, INC. OF NORTH CAROLINA				
TITLE SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE				
SIZE <b>C</b>	SCALE <b>1:12</b>	DOCUMENT NO. <b>MTC3975083</b>		
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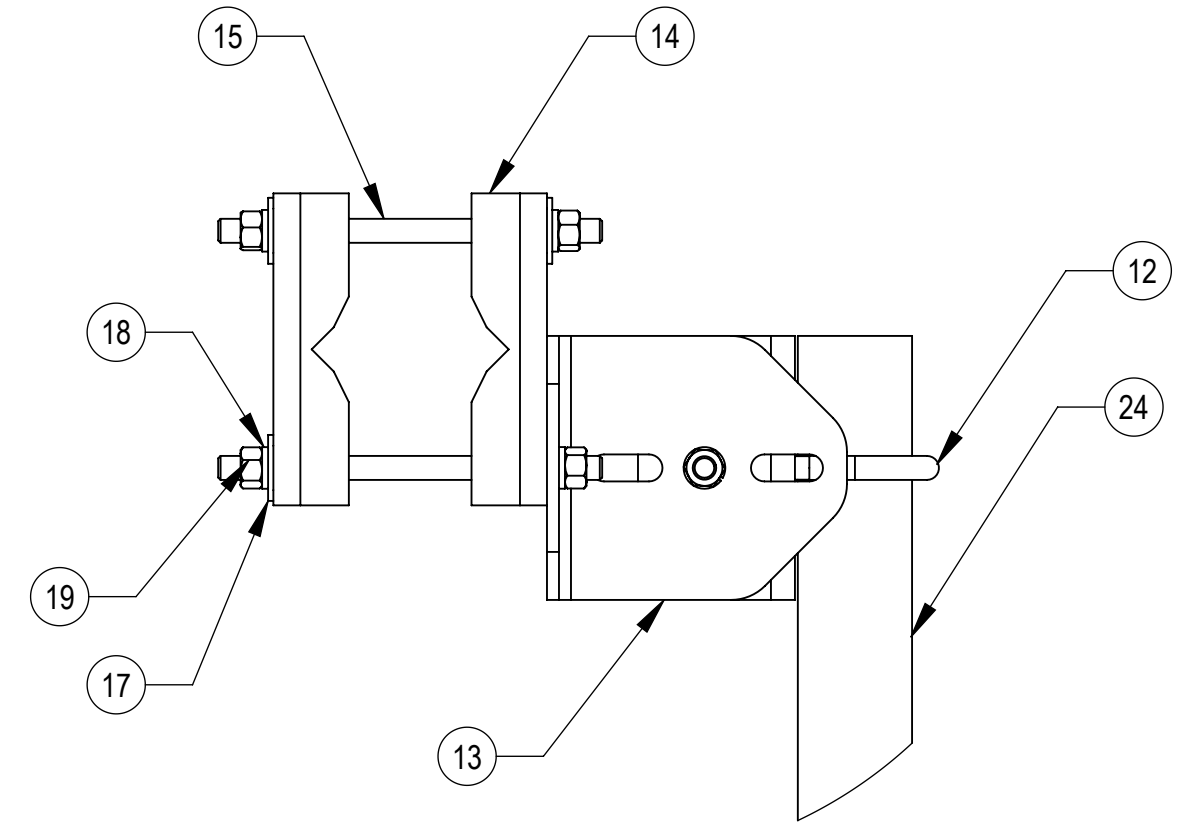
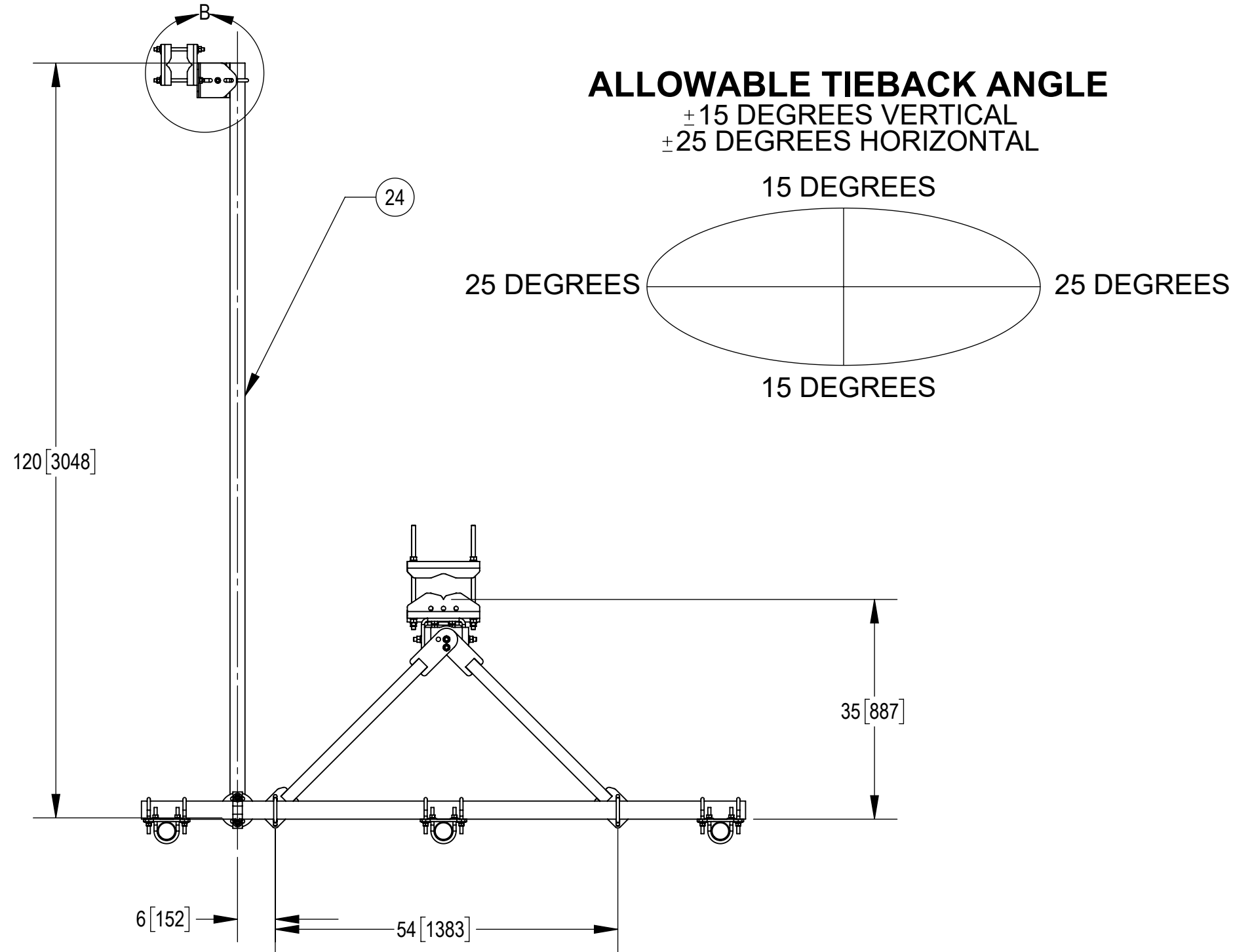
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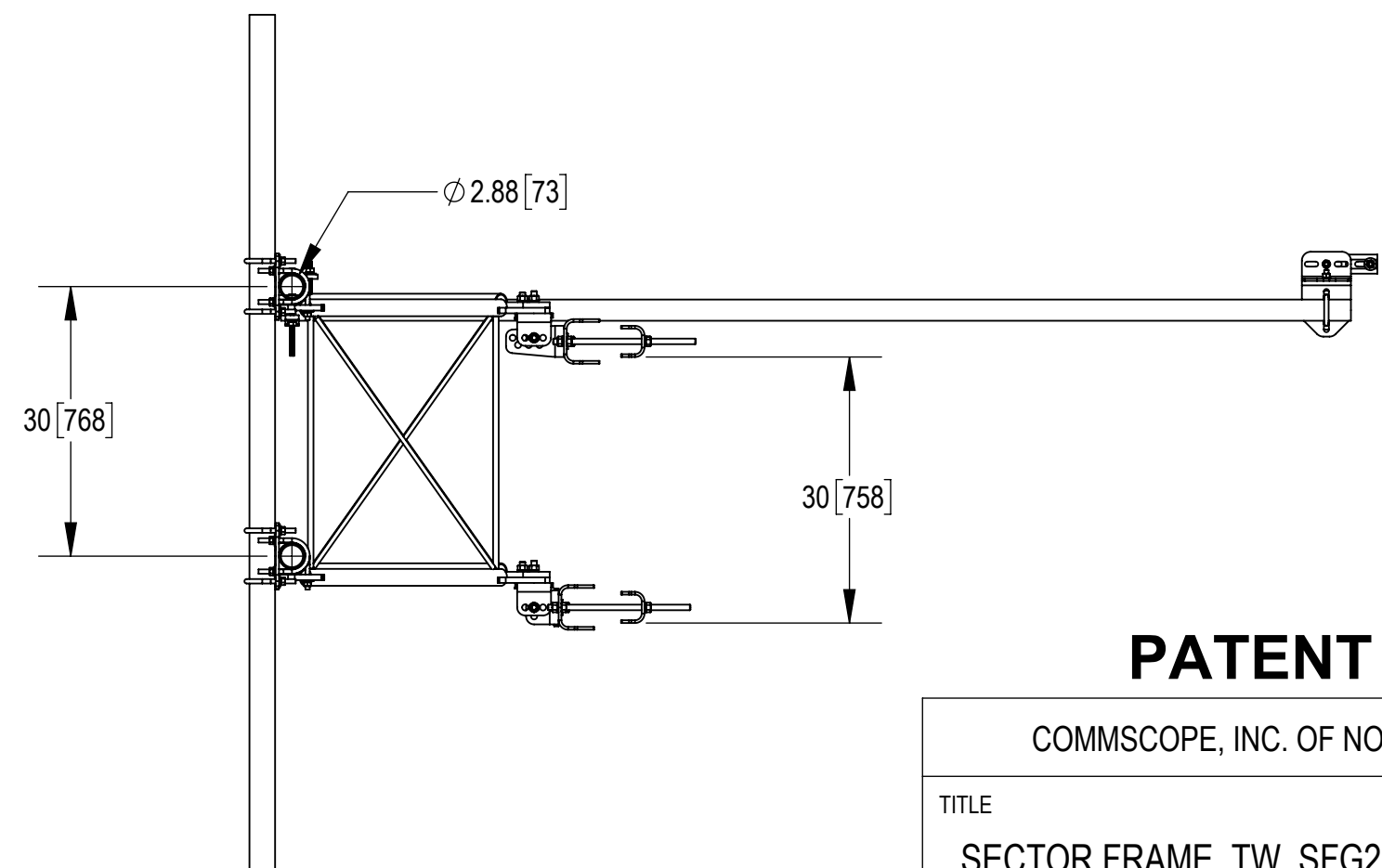
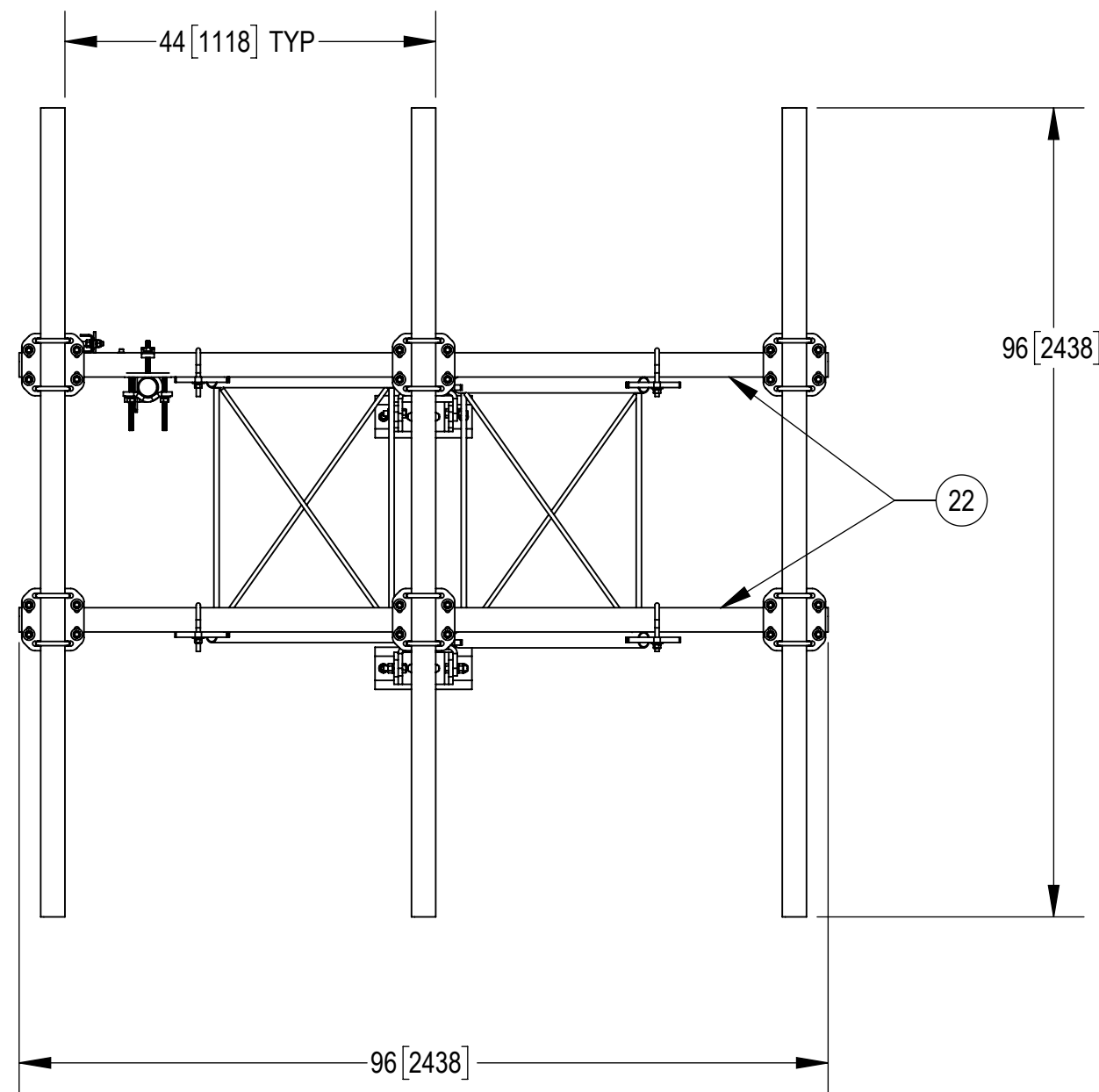
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NOTES:



DETAIL B  
SCALE 1:4



**PATENT PENDING**

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE  
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

SIZE <b>C</b>	SCALE <b>1:20</b>	DOCUMENT NO. <b>MTC3975083</b>
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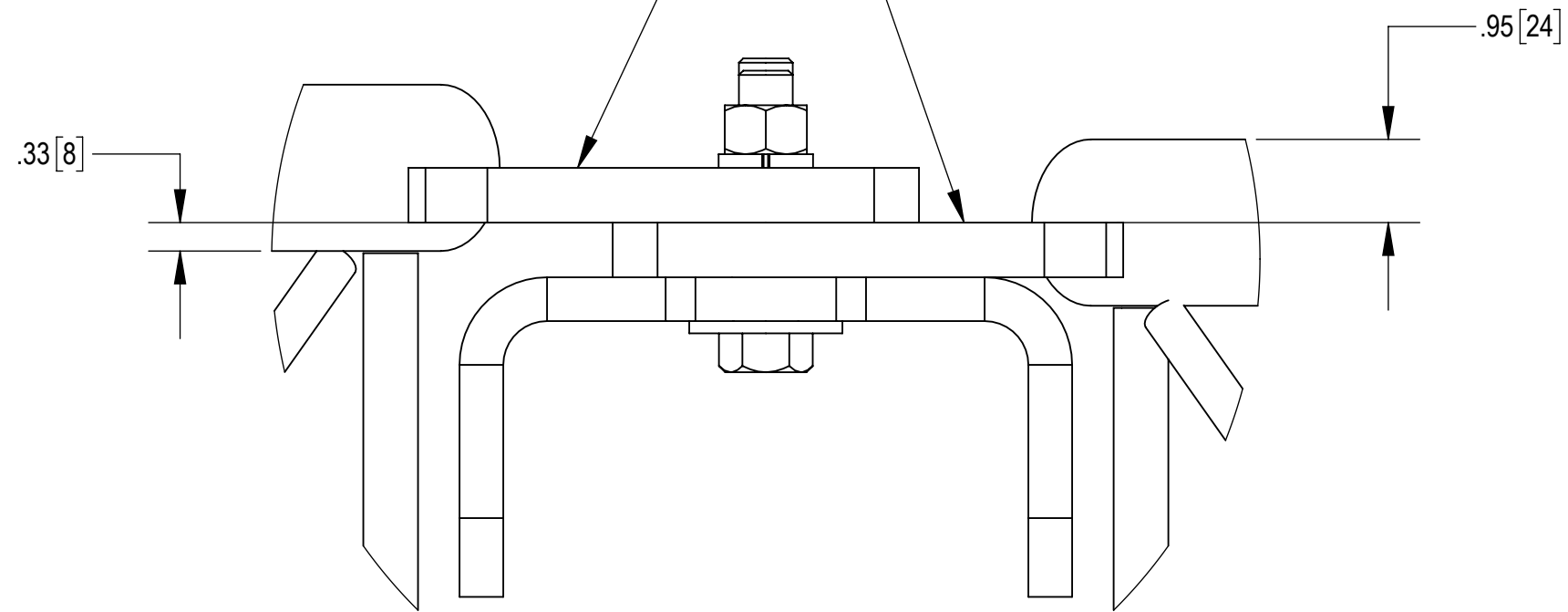
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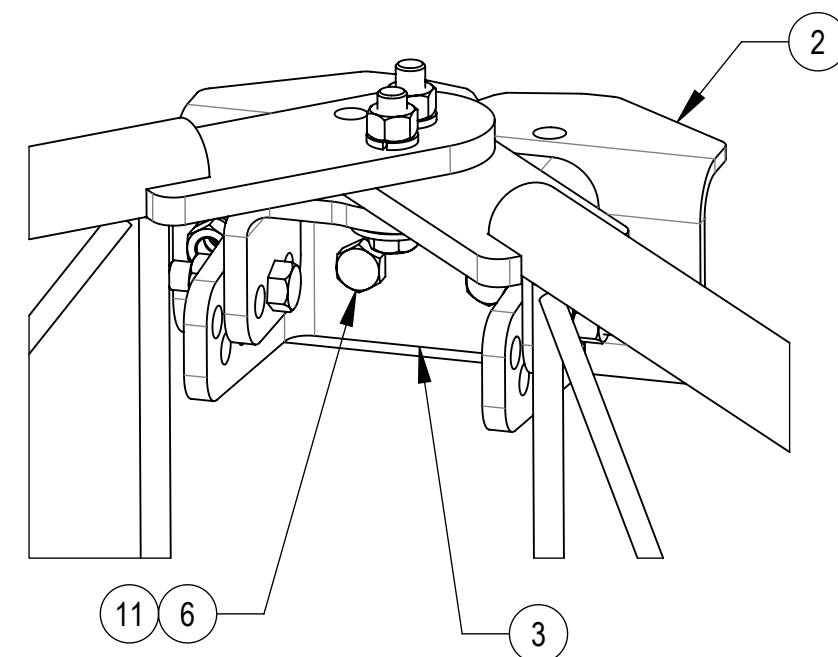
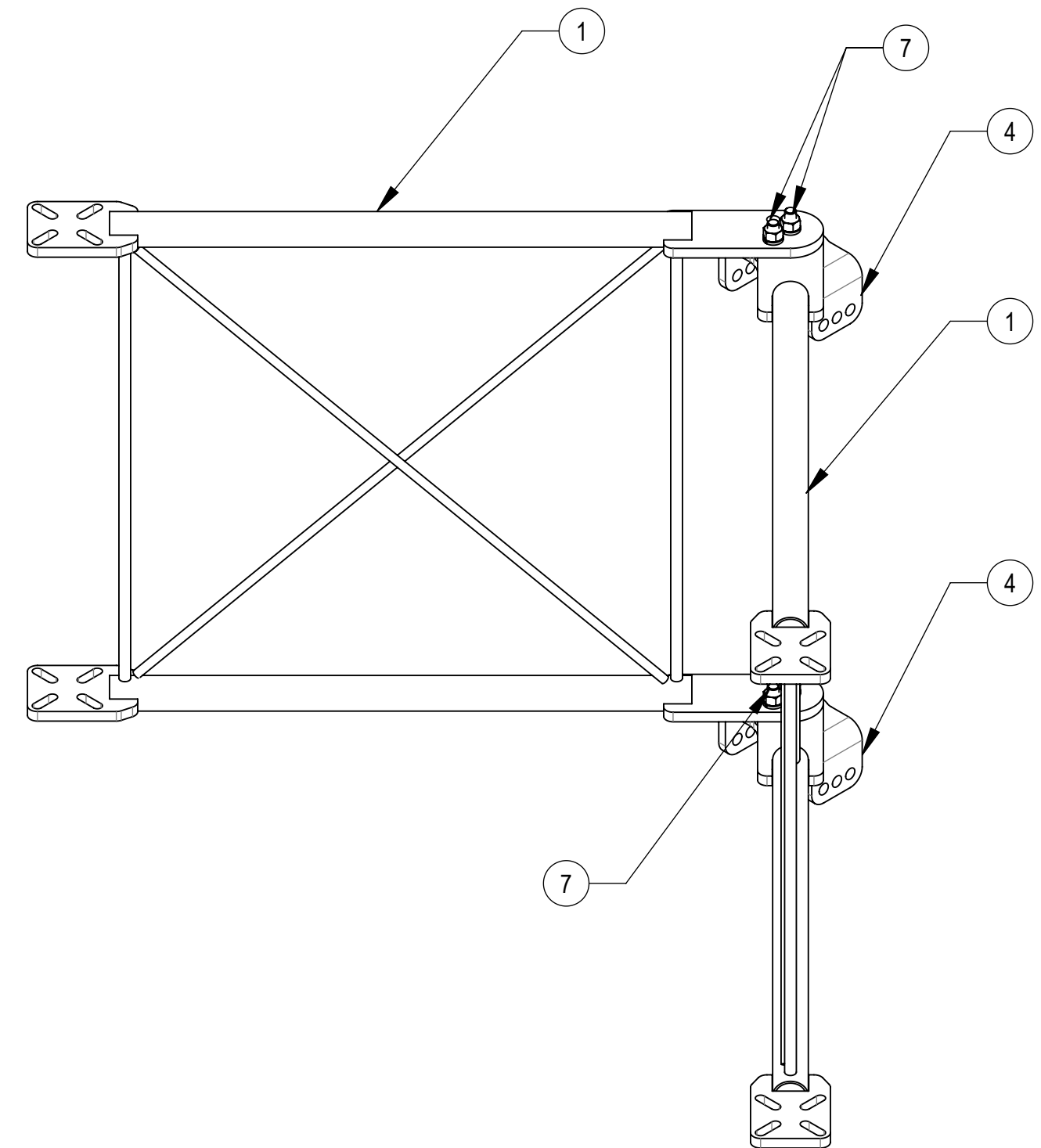
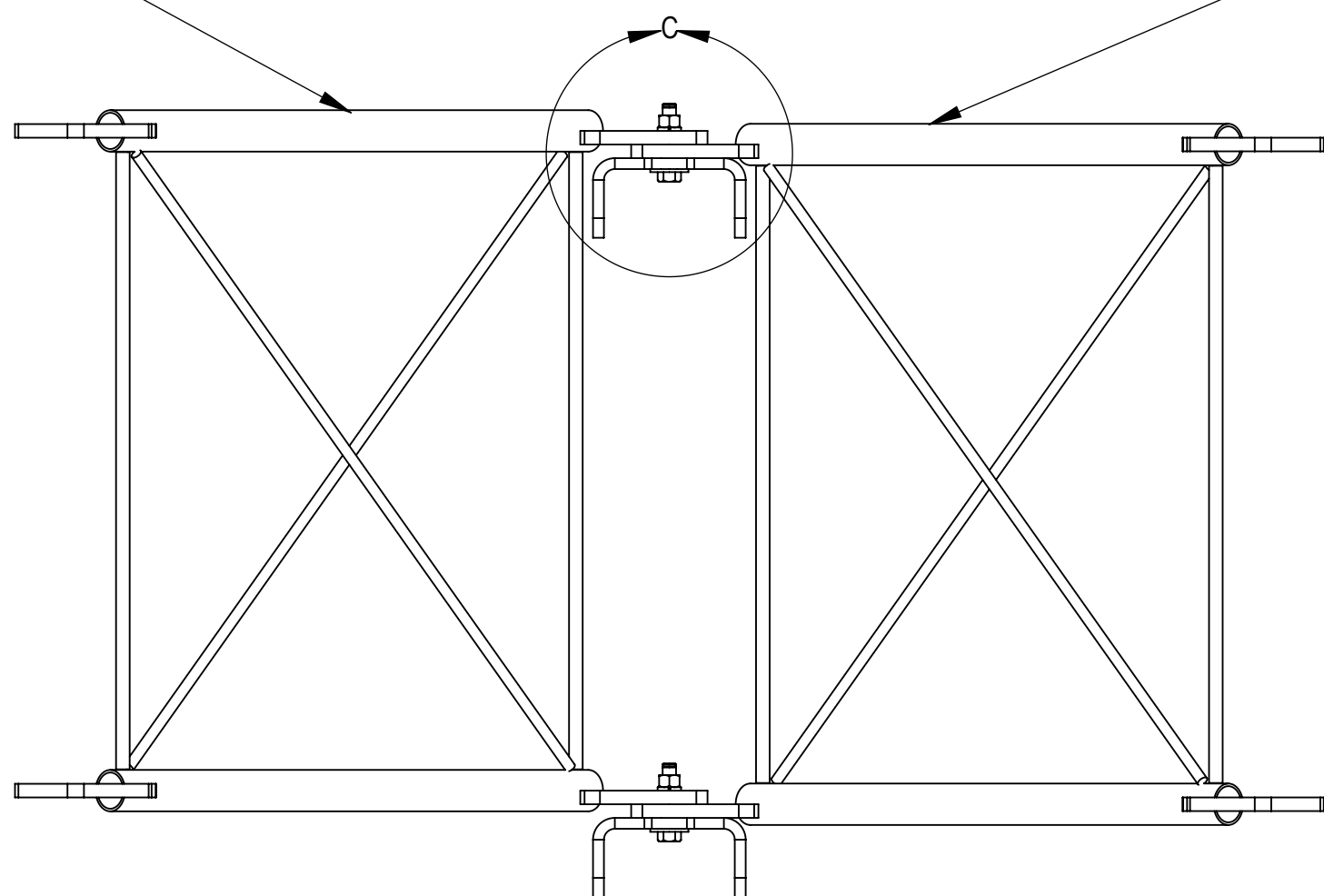
# STEP1: ATTACH STANDOFF ARMS (SFV01) TO AZIMUTH BRACKETS (SFV02) USING BOLT KITS (GB-05305)

**LOWER ARM "UPSIDE DOWN"**      **UPPER ARM "RIGHT SIDE UP"**



DETAIL C  
SCALE 1:2

**STANDOFF ARM ORIENTATION IS CRITICAL!  
WHEN ASSEMBLED, ARMS SHOULD BE LEVEL  
WITH EACH OTHER. ALSO SEE DETAIL C ABOVE**



**ISO ROTATED VIEW**

**PATENT PENDING**

COMMSCOPE, INC. OF NORTH CAROLINA				
TITLE SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE				
SIZE <b>C</b>	SCALE <b>1:8</b>	DOCUMENT NO. MTC3975083		
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		VERSION	STATUS	REVISION
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				4 OF 7

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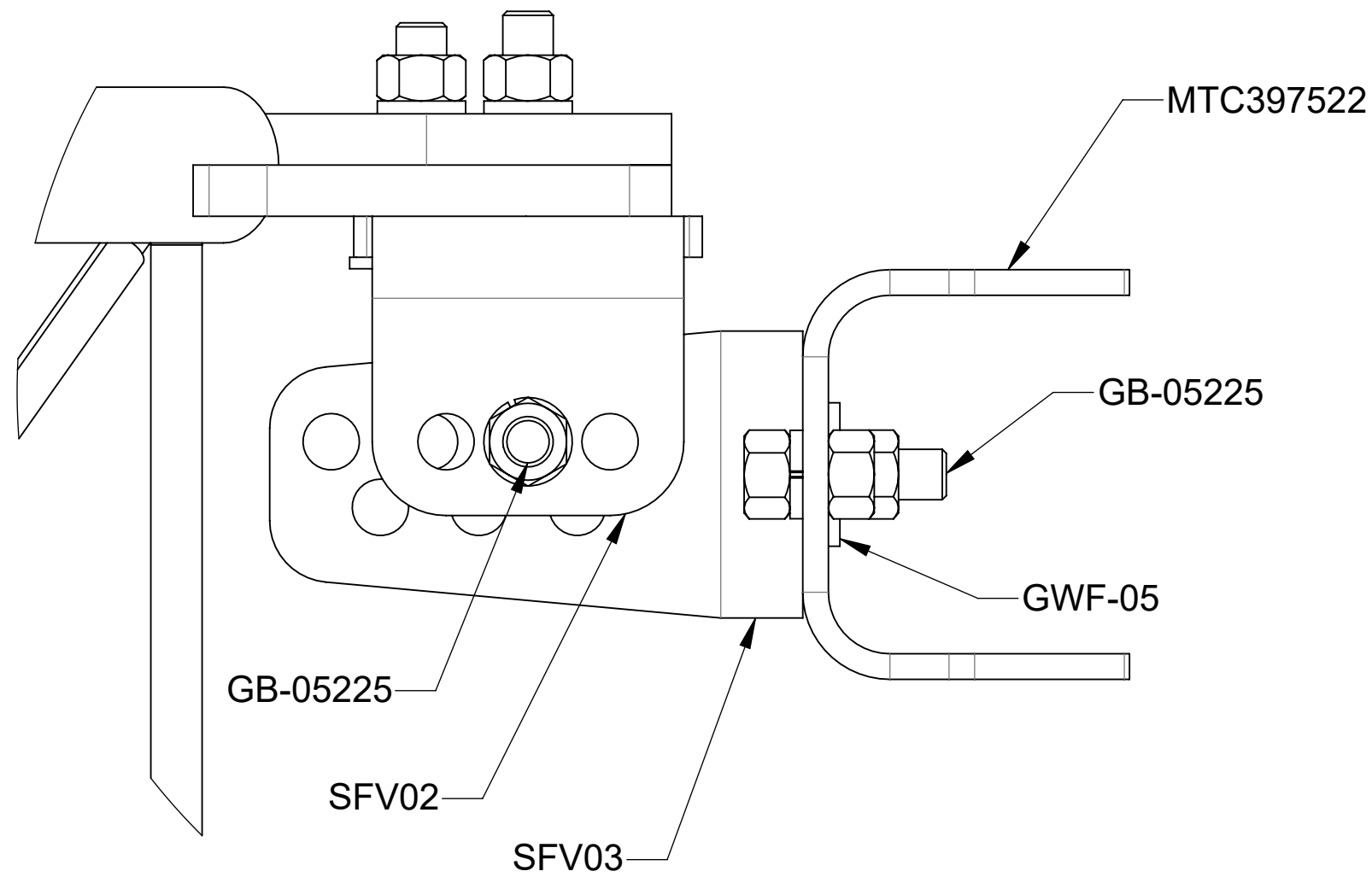
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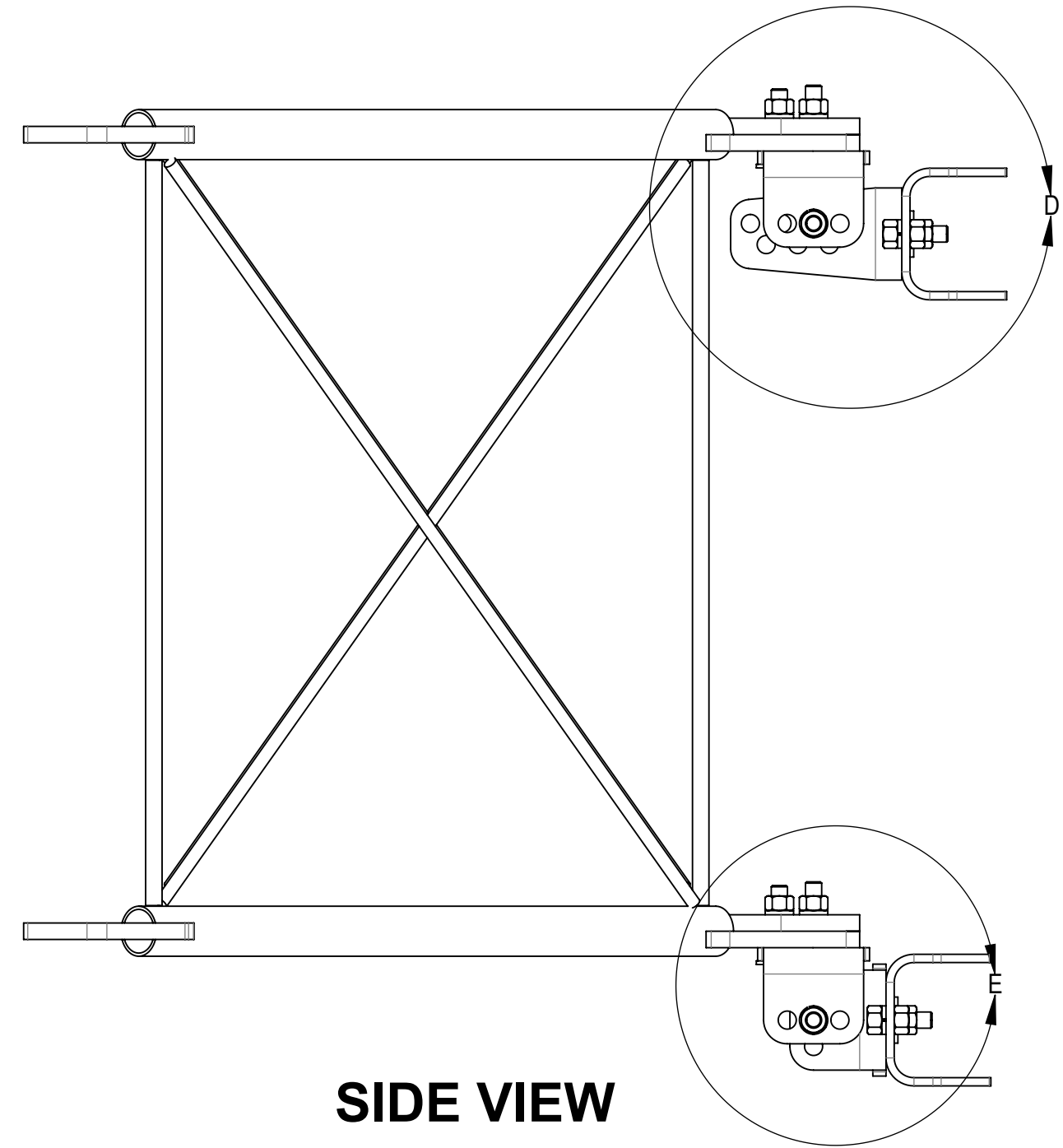
NOTES:

**STEP 2A: ON TOP, ATTACH TAPER BRACKET (SFV03) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). SEE ISO ROTATED VIEW. ATTACH TAPER BRACKET (SFV03) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS (GB-05225).**

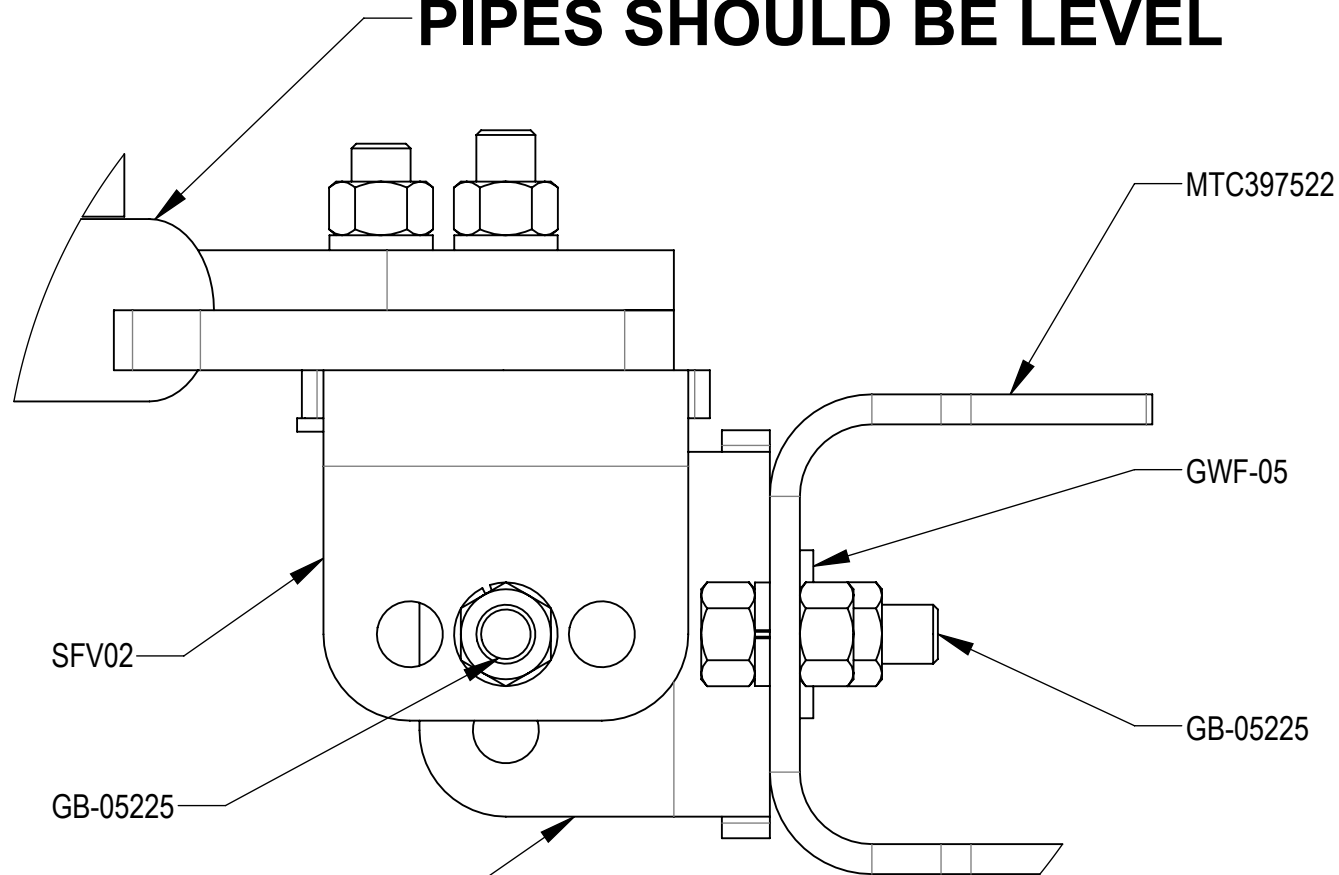
**STEP 2B: ON BOTTOM, ATTACH AZIMUTH BRACKET (SFV02) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). ATTACH AZIMUTH BRACKET (SFV02) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS(GB-05225).**



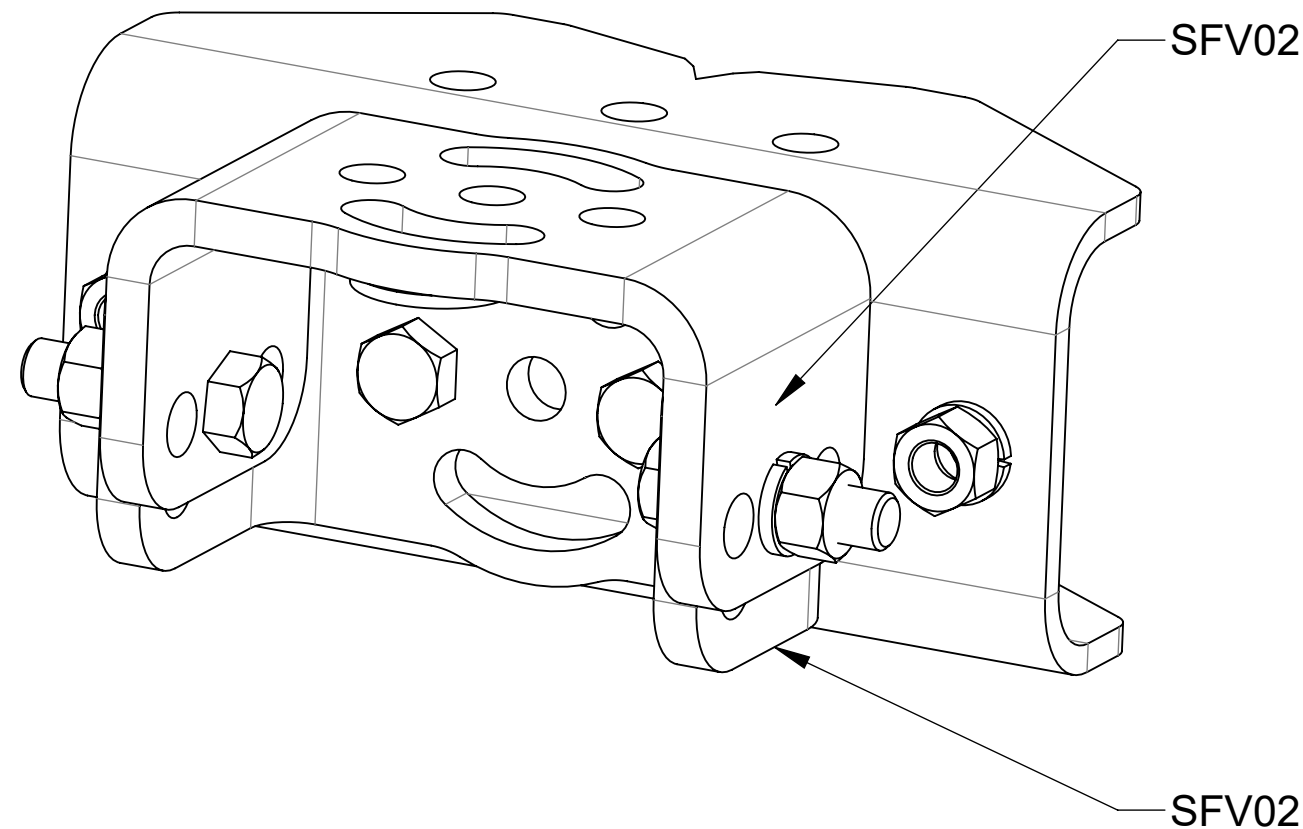
DETAIL D  
SCALE 1 : 2



**STANDOFF ARM ORIENTATION IS CRITICAL! WHEN ASSEMBLED, PIPES SHOULD BE LEVEL**



DETAIL E  
SCALE 1 : 2



**ISO ROTATED VIEW**

**PATENT PENDING**

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE  
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

SIZE <b>C</b>	SCALE <b>1:4</b>	DOCUMENT NO. <b>MTC3975083</b>		
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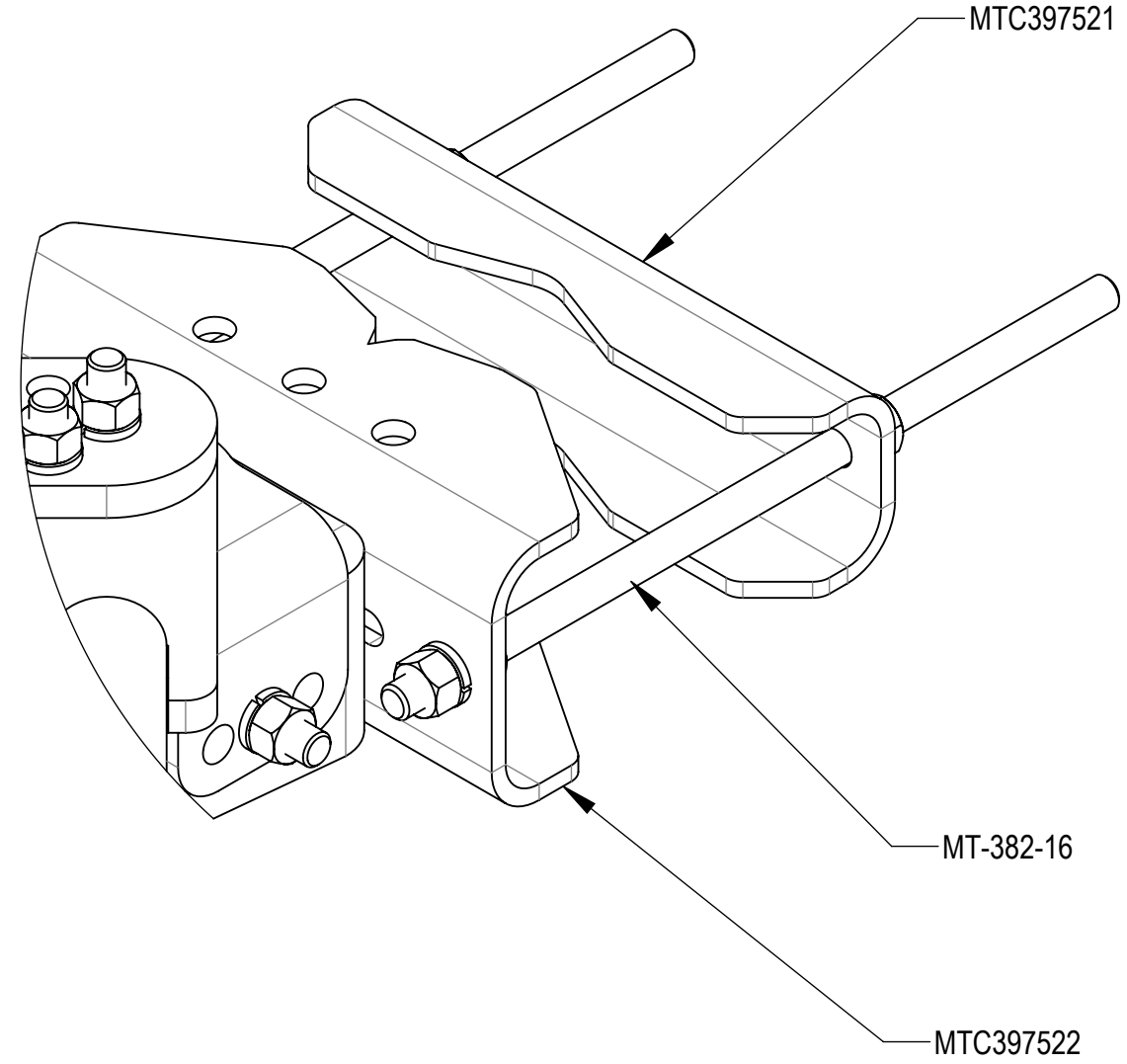
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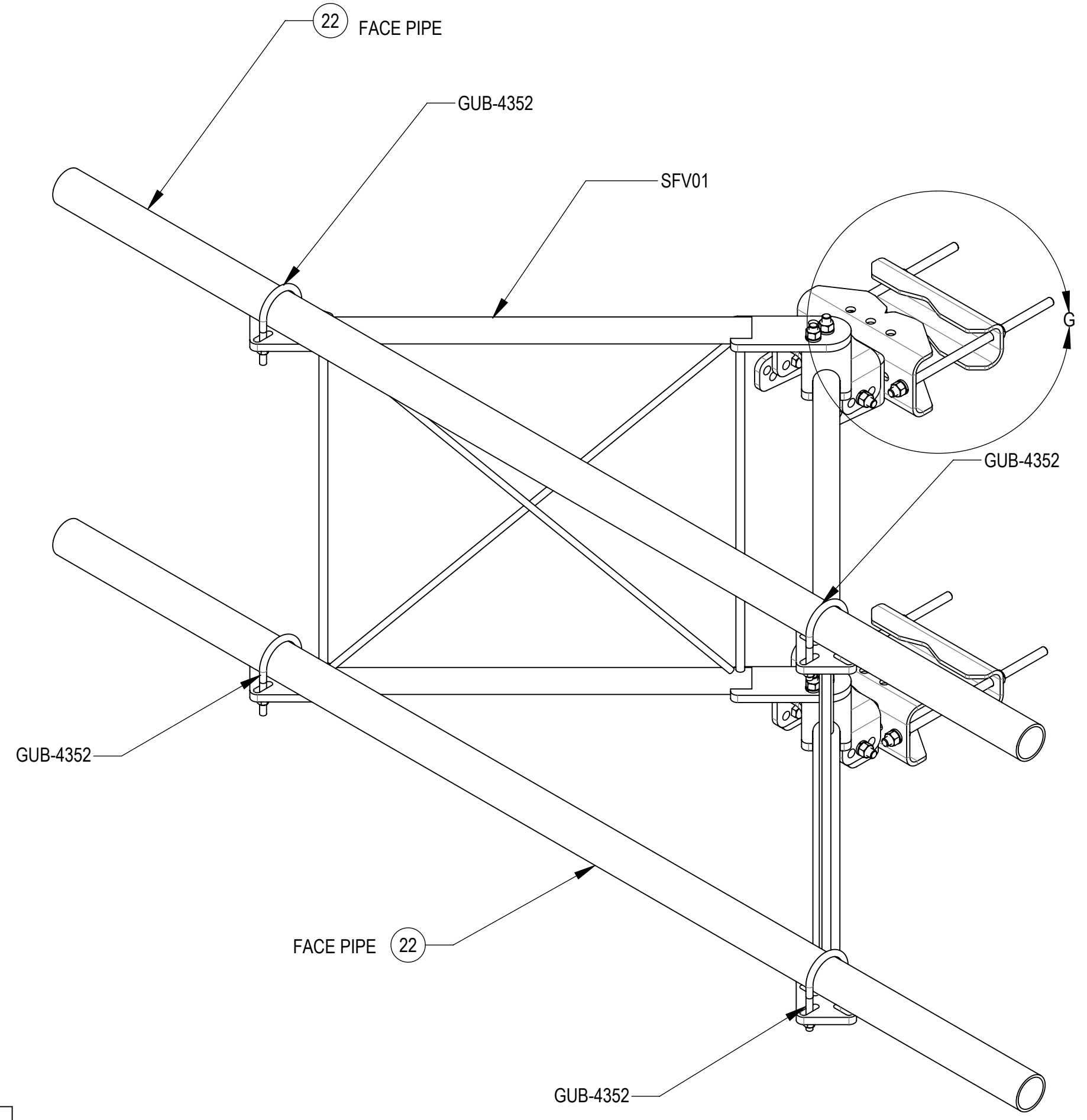
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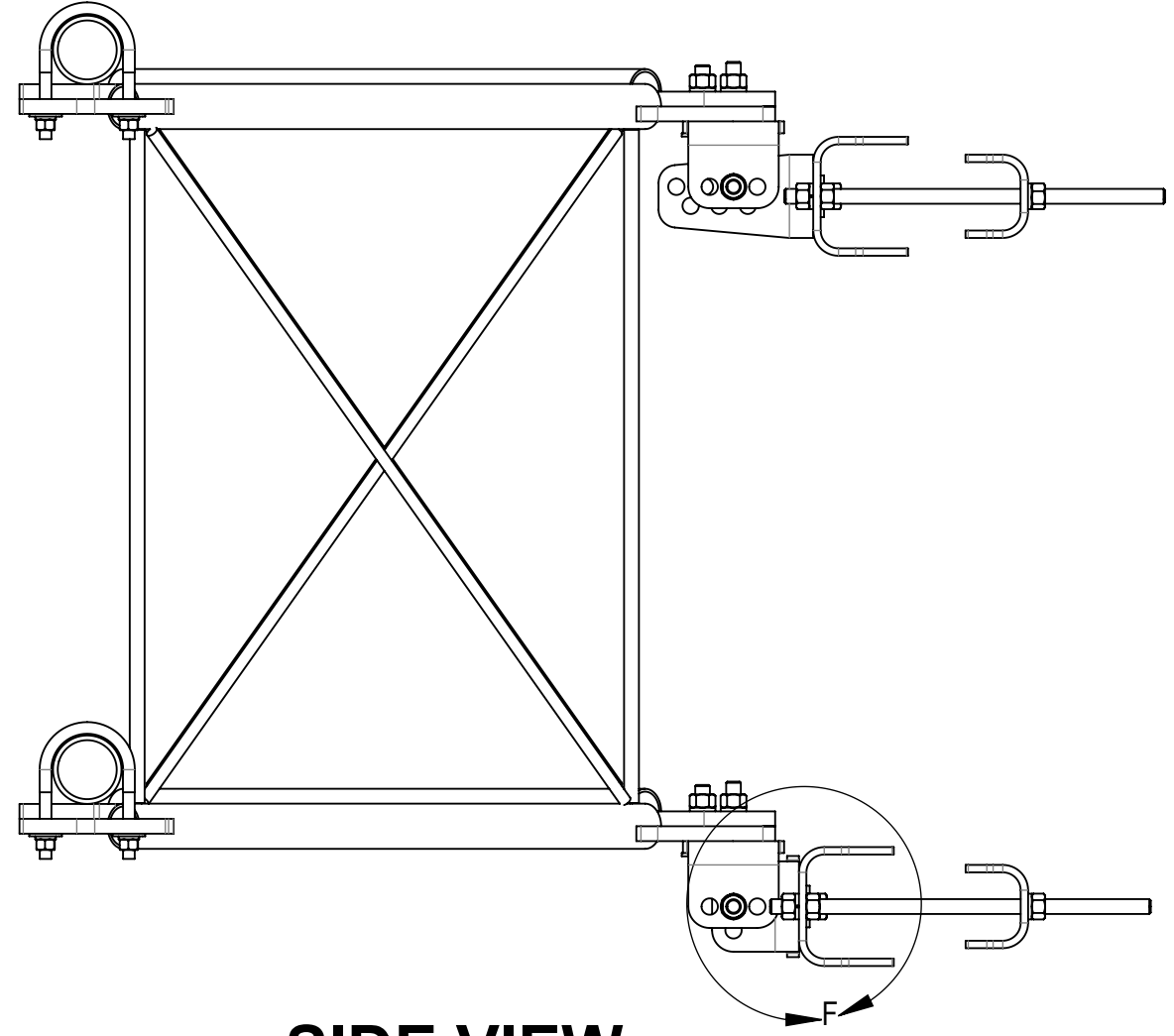
**STEP 3: ATTACH FACE PIPES TO STANDOFF ARMS (SFV01) USING U-BOLTS (GUB-4240).**



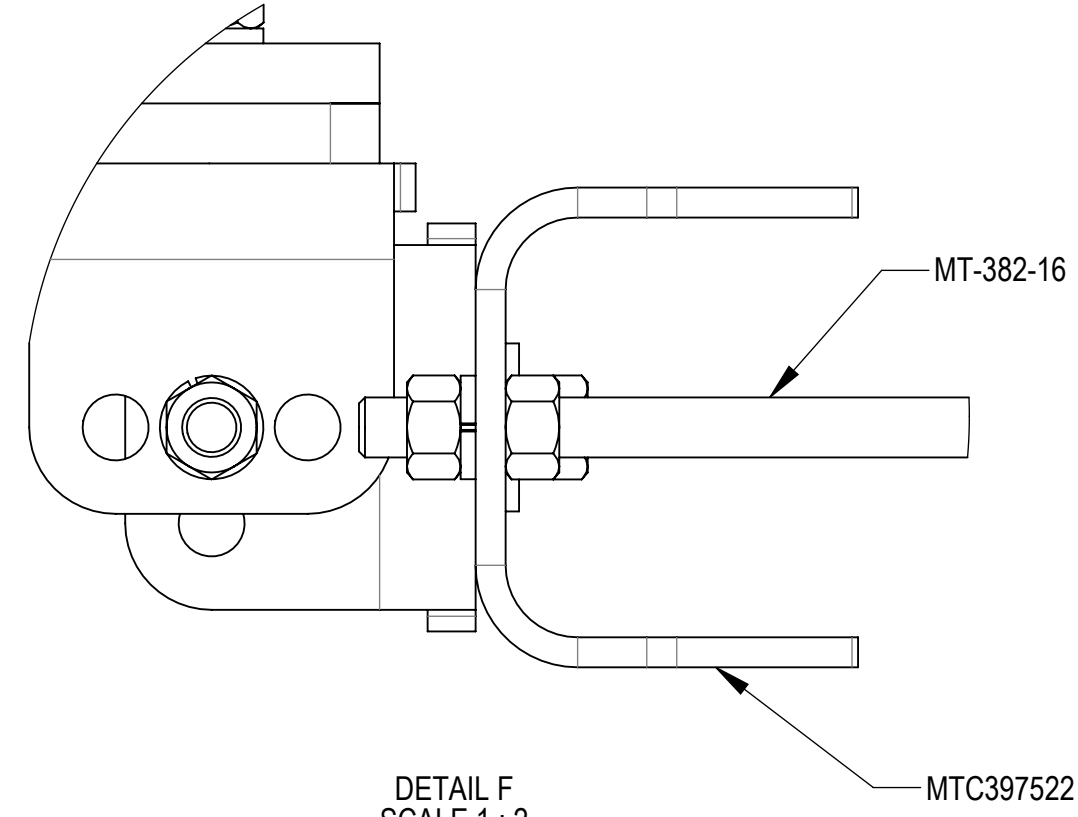
DETAIL G  
SCALE 1 : 3



**ISO VIEW**



**SIDE VIEW**



DETAIL F  
SCALE 1 : 2

**PATENT PENDING**

COMMSCOPE, INC. OF NORTH CAROLINA				
TITLE SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE				
SIZE <b>C</b>	SCALE <b>1:8</b>	DOCUMENT NO. <b>MTC3975083</b>		
		DRAWING		SHEET 6 OF 7
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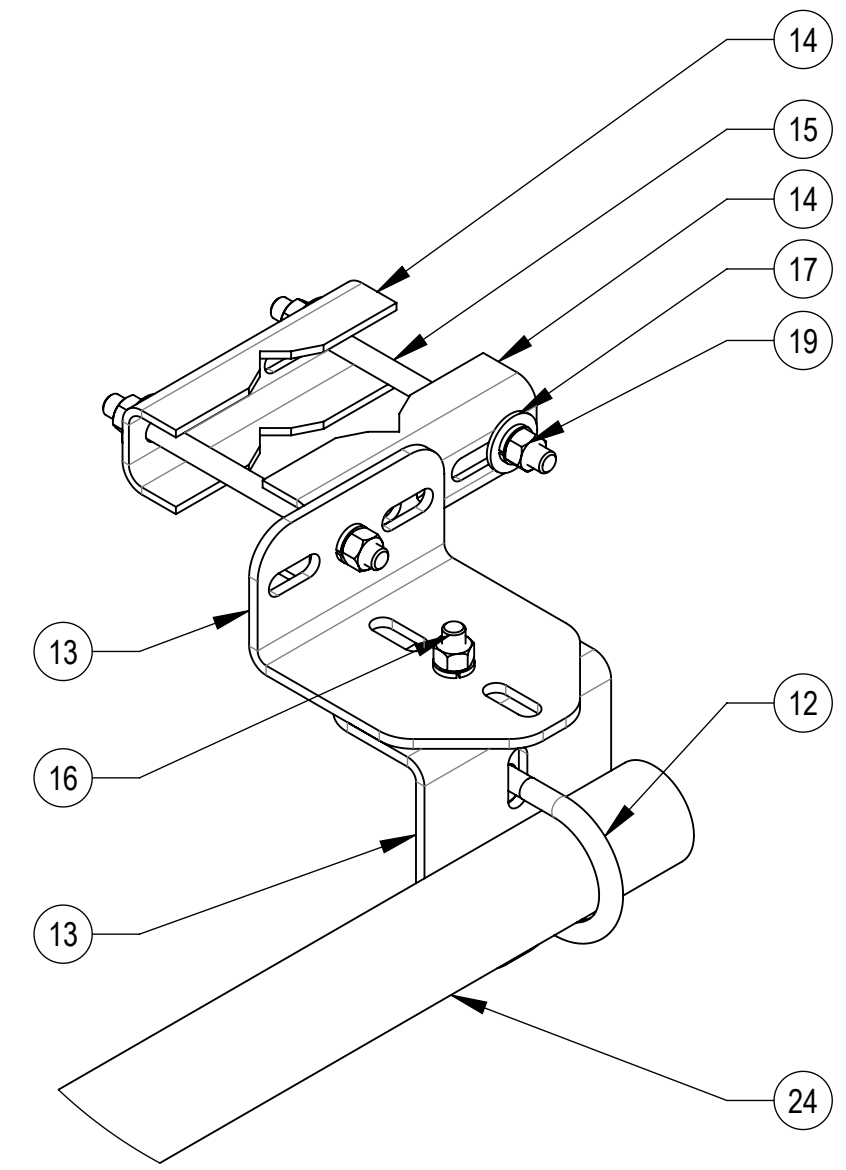
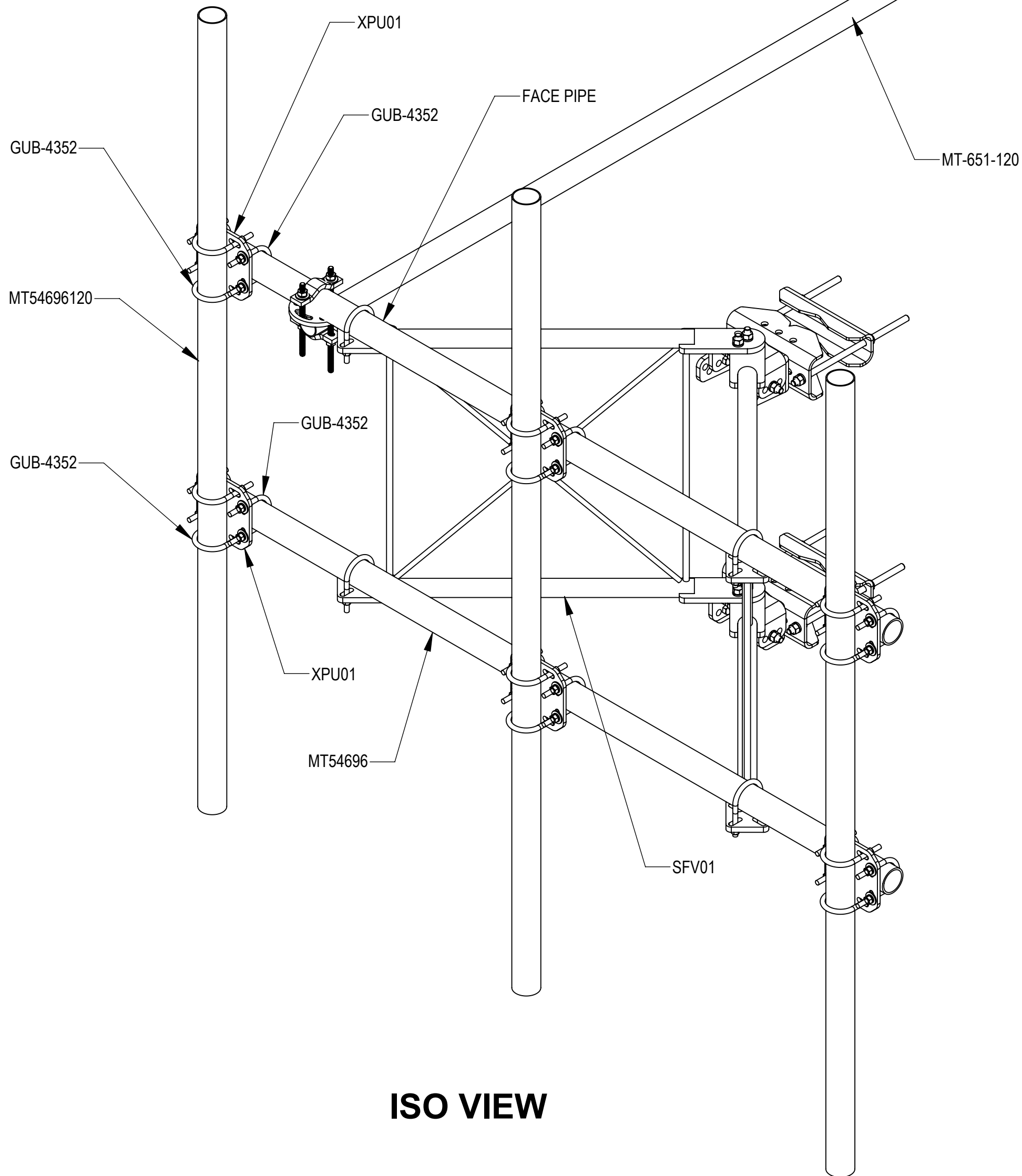
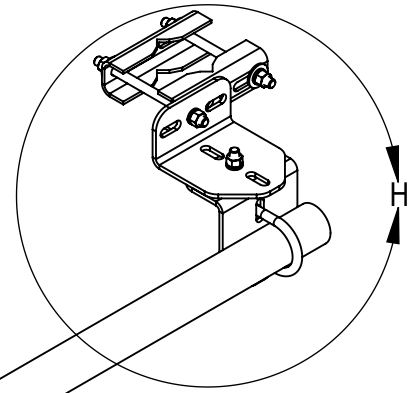
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NOTES:

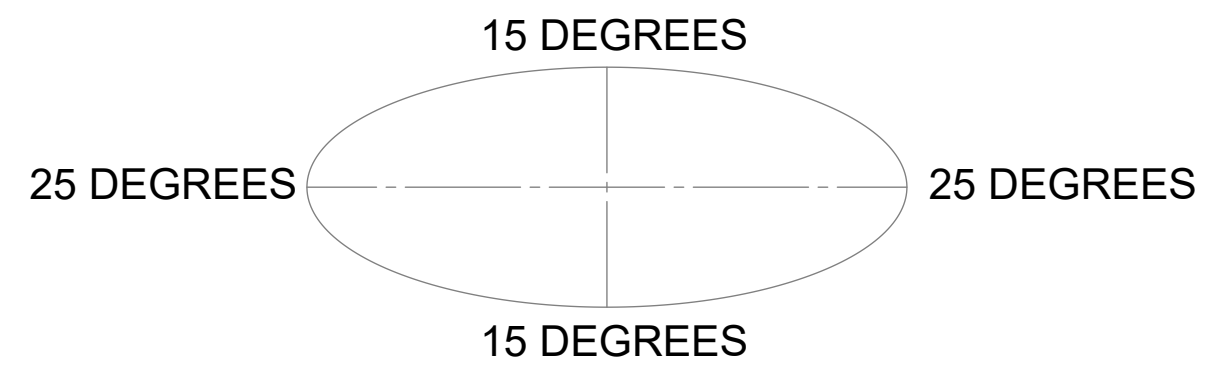
**STEP 4: ATTACH ANTENNA PIPES & TIE BACK PIPE (MT-651-120) TO FACE PIPES USING CROSSOVER BRACKETS (XAU01) AND U-BOLTS (GUB-4240). LOCATION SHOWN IS FOR MAXIMUM LOADING.**




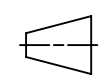
DETAIL H  
SCALE 1:4

**ALLOWABLE TIEBACK ANGLE**

±15 DEGREES VERTICAL  
±25 DEGREES HORIZONTAL



**PATENT PENDING**

COMMSCOPE, INC. OF NORTH CAROLINA				
TITLE SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE				
SIZE <b>C</b>	SCALE <b>1:10</b>	DOCUMENT NO. <b>MTC3975083</b>		
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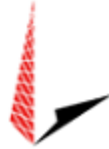
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**AMERICAN TOWER®**  
CORPORATION

This report was prepared for American Tower Corporation by



**TOWER  
ENGINEERING  
PROFESSIONALS**

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## Structural Analysis Report

**Structure** : 347 ft Guyed Tower  
**ATC Site Name** : Wolcott-Waterbury,CT  
**ATC Site Number** : 207941  
**Engineering Number** : 13729960\_C3\_02  
**Proposed Carrier** : DISH WIRELESS L.L.C.  
**Carrier Site Name** : BOHVN00036A  
**Carrier Site Number** : BOHVN00036A  
**Site Location** : 164 County Road  
Wolcott, CT 06716  
41.5762, -72.9561  
**County** : New Haven  
**Date** : October 25, 2021  
**Max Usage** : 73%  
**Result** : Pass

Prepared By:

Ayoub Sabor  
TEP

Reviewed By:



10/25/2021

**COA : PEC.0001553**





**Table of Contents**

Introduction .....3

Supporting Documents .....3

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Existing and Reserved Equipment.....4

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Proposed Equipment .....4

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Foundations .....5

Deflection, Twist and Sway\* .....5

Standard Conditions .....6

Calculations .....Attached



## **Introduction**

The purpose of this report is to summarize results of a structural analysis performed on the 347 ft Guyed tower to reflect the change in loading by DISH WIRELESS L.L.C..

## **Supporting Documents**

<b>Tower Drawings</b>	Mapping by TEP Project #259425.491496, dated April 30, 2021
<b>Foundation Drawing</b>	Mapping by Delta Oaks Group Project #BGI21-08509-03, dated May 18, 2021
<b>Geotechnical Report</b>	Delta Oaks Group Project #GEO21-08509-03, dated June 14, 2021
<b>Modifications</b>	Tectonic Project #2850.CT956, dated June 27, 2006 SC Job #121103, dated January 4, 2013

## **Analysis**

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	117 mph (3-second gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-second gust) w/ 1.00" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 1
<b>Topographic Category:</b>	1
<b>Spectral Response:</b>	$S_s = 0.19$ , $S_i = 0.05$
<b>Site Class:</b>	D - Stiff Soil - Default

## **Conclusion**

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
306.8	1	Telewave ANT150F6-6	Side Arm	(3) 7/8" Coax	CALAMP WIRELESS NETWORKS CORPORATION
296.6	1	18' Dipole	Side Arm	-	COX
252.0	1	Kathrein Scala 2x3 7500000044	Side Arm	(1) 1 5/8" Coax	HC2 HOLDINGS, INC.
213.8	3	RFS FIM800CAB-C1D	Sector Frames	(3) 1 1/4" Hybriflex Cable	SPRINT NEXTEL
210.7	3	Quintel QD66512-3D			
210.0	3	RFS APXVSP18-C-A20			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	3	Alcatel-Lucent 800MHz RRH			
182.0	1	Ericsson 800 MHz Radio Filter	Side Arm	-	COX
70.0	1	20' Omni	Side Arm	-	COX
70.0	1	PCTEL GPS-TMG-HR-26N	Leg	(1) 1/2" Coax	SPRINT NEXTEL

**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
223.0	1	Raycap RDIDC-9181-PF-48	Sector Frames	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B605			
	3	Fujitsu TA08025-B604			
	3	JMA Wireless MX08FRO665-21			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines on the tower face with the least amount of existing lines.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	73%	Pass
Diagonals	60%	Pass
Horizontals	63%	Pass
Guys	65%	Pass
Leg Bolts	21%	Pass

**Foundations**

Reaction Component	Calculated Capacities	Analysis Reactions	% of Usage
Base Axial (kips)	-	51.9	12%
Anchor 1 Uplift (kips)	-	6.7	38%
Anchor 1 Shear (kips)	-	9.4	37%
Anchor 2 Uplift (kips)	220.5	22.3	10%
Anchor 3 Uplift (kips)	220.5	8.7	4%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection, Twist and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
252.0	Kathrein Scala 2x3 7500000044	HC2 HOLDINGS, INC.	0.224	0.022	0.071
223.0	Fujitsu TA08025-B604	DISH WIRELESS L.L.C.	0.214	0.014	0.073
	Fujitsu TA08025-B605				
	JMA Wireless MX08FRO665-21				
	Raycap RDIDC-9181-PF-48				

\*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



## **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

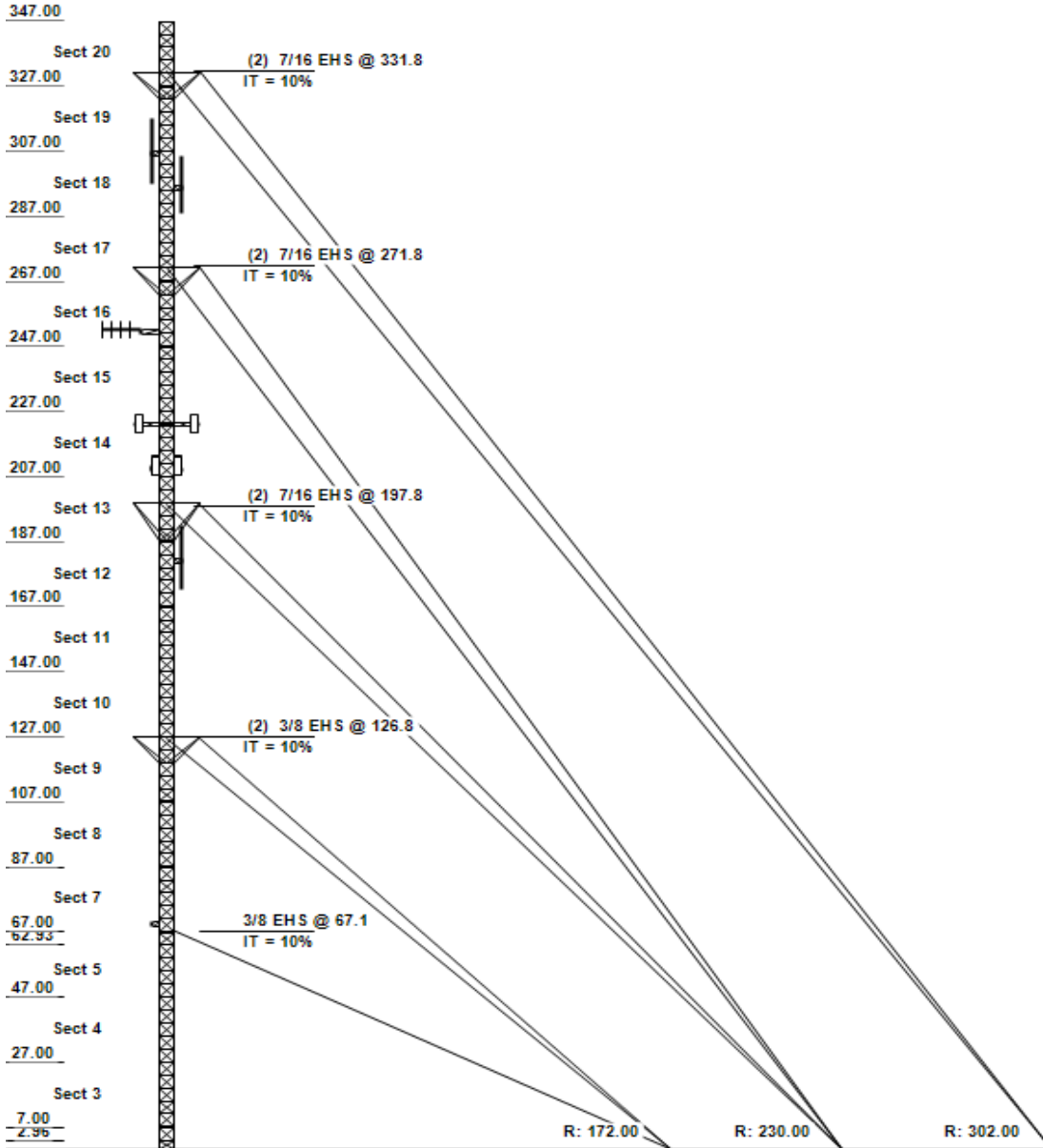
Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

Asset: 207941, Wolcott-Waterbury  
 Client: DISH WIRELESS L.L.C.  
 Code: ANSI/TIA-222-H

Height : 347 ft  
 Base Width : 3 ft  
 Shape : Triangle

Quadrant 1



SITE PARAMETERS

Nominal Wind : 117 mph wind with no ice Exposure : B Site Class : D  
 Ice Wind: 50 mph wind with 1" radial Topo Method: Method 1 Risk Cat : II  
 Service Wind : 60 mph Serviceability Topo Feature : S<sub>g</sub> : 0.194 S<sub>1</sub> : 0.054

SECTION PROPERTIES

Section	Leg Members	Diagonal Members	Horizontal Members
1 - 5	HPS 50 ksi 2.88x0.21	SOL 36 ksi 5/8" SOLID	SAU 36 ksi 2X1.5X0.1875
6 - 12	PST 50 ksi 2-1/2" DIA	SOL 36 ksi 5/8" SOLID	SAU 36 ksi 2X1.5X0.1875
13	PST 50 ksi 2-1/2" DIA	SOL 36 ksi 3/4" SOLID	SAU 36 ksi 2X1.5X0.1875
14 - 16	PST 50 ksi 2-1/2" DIA	SOL 36 ksi 5/8" SOLID	SAU 36 ksi 2X1.5X0.1875
17	PST 50 ksi 2-1/2" DIA	SOL 36 ksi 7/8" SOLID	SAE 36 ksi 2X2X0.25
18 - 19	PST 50 ksi 2-1/2" DIA	SOL 36 ksi 5/8" SOLID	SAU 36 ksi 2X1.5X0.1875
20	PST 50 ksi 2-1/2" DIA	SOL 36 ksi 7/8" SOLID	SAE 36 ksi 2X2X0.25

REDUNDANT SECONDARY BRACING

Section	Sub Diag 1	Sub Horiz 1	Sub Diag 2	Sub Horiz 2	Sub Diag 3	Sub Horiz 3
1 - 20	-	-	-	-	-	-

DISCRETE APPURTENANCE

Elev (ft)	Type	Qty	Description
332.00	Torque Arm	1	Generic Torque Arm
306.80	OMNI	1	Telewave ANT150F6-6
303.00	Side Arm	1	Generic Round Side Arm
296.60	DIPOLE	1	Generic 18' Dipole
282.00	Side Arm	1	Generic Round Side Arm
272.00	Torque Arm	1	Generic Torque Arm
252.00	Side Arm	1	Generic Flat Side Arm
252.00	TV	1	Kathrein Scala 2x3 7500000044
223.00	BOB/SSB	1	Raycap RDIDC-9181-PF-48
223.00	PANEL	3	JMA Wireless MX08FRO665-21
223.00	RRU/RRH	3	Fujitsu TA08025-B604
223.00	RRU/RRH	3	Fujitsu TA08025-B605
223.00	Sector Frame	3	Generic Flat Light Sector Fram
213.80	Filter	3	RFS FIM800CAB-C1D
212.00	Sector Frame	3	Generic Round Sector Frame
210.70	PANEL	3	Quintel QD66512-3D
210.00	Filter	3	Ericsson 800 MHz Radio Filter
210.00	PANEL	3	RFS APXVSP18-C-A20
210.00	RRU/RRH	3	Alcatel-Lucent 1900 MHz 4X45 R
210.00	RRU/RRH	3	Alcatel-Lucent 800MHz RRH
198.00	Torque Arm	1	Generic Torque Arm
182.00	OMNI	1	Generic 20' Omni
172.00	Side Arm	1	Generic Round Side Arm
127.00	Torque Arm	1	Generic Torque Arm
70.00	GPS	1	PCTEL GPS-TMG-HR-26N

LINEAR APPURTENANCE

Elev (ft)	From	To	Qty	Description
	0.00	306.00	3	7/8" Coax

Asset: 207941, Wolcott-Waterbury  
 Client: DISH WIRELESS L.L.C.  
 Code: ANSI/TIA-222-H

Height : 347 ft  
 Base Width : 3 ft  
 Shape : Triangle

LINEAR APPURTENANCE

Elev (ft)		Qty	Description
From	To		
0.00	252.00	1	1 5/8" Coax
0.00	220.00	1	1.60" (40.6mm) Hybrid
0.00	210.00	3	1 1/4" Hybriflex Cable
0.00	70.00	1	1/2" Coax

GLOBAL BASE FOUNDATION DESIGN LOADS

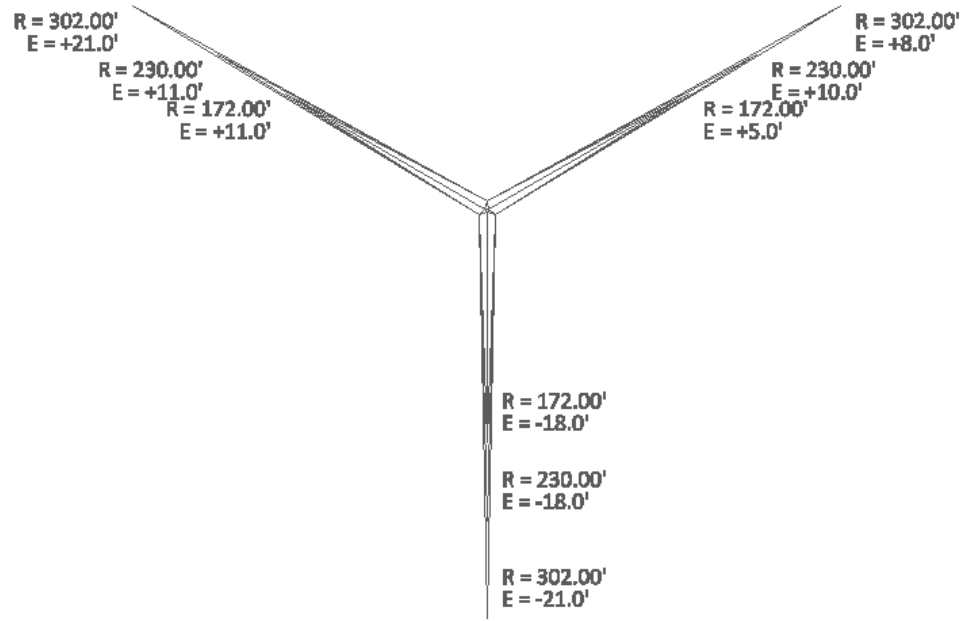
Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL+WL	41.45	87.16	1.4
DL+WL+IL	16.59	135.7	0.49

INDIVIDUAL BASE FOUNDATION DESIGN LOADS

Vertical (kip)	Uplift (kip)	Horizontal (kip)
51.90	0.00	10.24

Asset: 207941, Wolcott-Waterbury  
 Client: DISH WIRELESS L.L.C.  
 Code: ANSI/TIA-222-H

Height : 347 ft  
 Base Width : 3 ft  
 Shape : Triangle



GUY ANCHOR DESIGN LOADS				
Radius (ft)	Drop (ft)	Azimuth (o)	Uplift (kip)	Shear (kip)
172.00	-18.00	0	6.68	9.28
172.00	5.00	120	5.51	9.39
172.00	11.00	240	5.23	9.44
230.00	-18.00	0	22.31	21.34
230.00	10.00	120	20.14	21.62
230.00	11.00	240	19.96	21.53
302.00	-21.00	0	8.68	8.93
302.00	8.00	120	8.05	8.92
302.00	21.00	240	7.80	8.93



## ANALYSIS PARAMETERS

Location:	New Haven County, CT	Height:	347 ft
Type and Shape:	Guyed, Triangle	Base Elevation:	0.00 ft
Manufacturer:	Undetermined	Bottom Face Width:	3.00 ft
Kd	0.85	Top Face Width:	3.00 ft
Ke:	0.97		

## ICE &amp; WIND PARAMETERS

Exposure Category:	B	Design Wind Speed Without Ice:	117 mph
Risk Category:	II	Design Wind Speed with Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Windspeed:	60 mph
Topographic Category:	Flat	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	765 ft

## SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	0.94
T <sub>L</sub> (sec):	6	P:	1.3
S <sub>s</sub> :	0.194	S <sub>t1</sub> :	0.054
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.207	S <sub>d1</sub> :	0.086
		C <sub>s</sub> :	0.031
		C <sub>s, Max</sub> :	0.031
		C <sub>s, Min</sub> :	0.030

## LOAD CASES

1.2D + 1.0W Normal	117 mph wind with no ice
1.2D + 1.0W 60°	117 mph wind with no ice
1.2D + 1.0W 90°	117 mph wind with no ice
1.2D + 1.0W 120°	117 mph wind with no ice
1.2D + 1.0W 180°	117 mph wind with no ice
1.2D + 1.0W 210°	117 mph wind with no ice
1.2D + 1.0W 240°	117 mph wind with no ice
1.2D + 1.0W 300°	117 mph wind with no ice
1.2D + 1.0W 330°	117 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 60°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 90°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 120°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 180°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 210°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 240°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 300°	50 mph wind with 1" radial ice
1.2D + 1.0Di + 1.0Wi 330°	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
1.2D + 1.0Ev + 1.0Eh 60°	Seismic
1.2D + 1.0Ev + 1.0Eh 90°	Seismic
1.2D + 1.0Ev + 1.0Eh 120°	Seismic
1.2D + 1.0Ev + 1.0Eh 180°	Seismic
1.2D + 1.0Ev + 1.0Eh 210°	Seismic
1.2D + 1.0Ev + 1.0Eh 240°	Seismic
1.2D + 1.0Ev + 1.0Eh 300°	Seismic
1.2D + 1.0Ev + 1.0Eh 330°	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 60°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 90°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 120°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 180°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 210°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 240°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 300°	Seismic (Reduced DL)
0.9D - 1.0Ev + 1.0Eh 330°	Seismic (Reduced DL)

LOAD CASES

1.0D + 1.0W Service Normal	60 mph Wind with No Ice
1.0D + 1.0W Service 60°	60 mph Wind with No Ice
1.0D + 1.0W Service 90°	60 mph Wind with No Ice
1.0D + 1.0W Service 120°	60 mph Wind with No Ice
1.0D + 1.0W Service 180°	60 mph Wind with No Ice
1.0D + 1.0W Service 210°	60 mph Wind with No Ice
1.0D + 1.0W Service 240°	60 mph Wind with No Ice
1.0D + 1.0W Service 300°	60 mph Wind with No Ice
1.0D + 1.0W Service 330°	60 mph Wind with No Ice

TOWER LOADING

Discrete Appurtenance Properties 1.2D + 1.0W

Elev (ft)	Description	Qty	Wt. (lb)	EPA Length (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient Factor	Vert Ecc (ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
332.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	40.34	514	600
306.8	Telewave ANT150F6-6	1	41	5.5	20.3	2.7	2.7	1.00	1.00	0.0	0.00	39.44	184	49
303.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	39.30	174	225
296.6	Generic 18' Dipole	1	55	6.8	18.0	3.0	3.0	1.00	1.00	0.0	0.00	39.06	225	66
282.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	38.50	170	225
272.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	38.11	486	600
252.0	Generic Flat Side Arm	1	188	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	37.29	200	225
252.0	Kathrein Scala 2x3 7500000044	1	225	25.8	7.2	35.8	7.5	1.00	1.00	0.0	0.00	37.29	819	270
223.0	Raycap RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	36.01	46	26
223.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	36.01	72	270
223.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	36.01	72	230
223.0	JMA Wireless MX08FRO665-21	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.00	36.01	587	232
223.0	Generic Flat Light Sector Fram	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	36.01	924	1440
213.8	RFS FIM800CAB-C1D	3	53	1.2	1.3	9.7	8.5	0.80	0.50	0.0	0.00	35.58	45	191
212.0	Generic Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.00	35.49	733	1080
210.7	Quintel QD66512-3D	3	163	13.6	6.0	22.0	9.6	0.80	0.64	0.0	0.00	35.43	628	587
210.0	Ericsson 800 MHz Radio Filter	3	10	0.4	0.4	4.6	11.0	0.80	0.50	0.0	0.00	35.39	15	36
210.0	Alcatel-Lucent 800MHz RRH	3	53	2.1	1.6	13.0	10.8	0.80	0.67	1.4	144.80	35.46	103	191
210.0	Alcatel-Lucent 1900 MHz 4X45 R	3	60	2.3	2.1	11.1	10.7	0.80	0.67	-1.1	123.38	35.34	112	216
210.0	RFS APXVSPP18-C-A20	3	57	8.0	6.0	11.8	7.0	0.80	0.69	0.0	0.00	35.39	400	205
198.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	34.80	444	600
182.0	Generic 20' Omni	1	55	6.0	20.0	3.0	3.0	1.00	1.00	0.0	0.00	33.98	173	66
172.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	33.43	148	225
127.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	30.66	391	600
70.0	PCTEL GPS-TMG-HR-26N	1	1	0.1	0.4	3.2	3.2	1.00	1.00	0.0	0.00	25.86	2	1
Totals		47	7,047	357.2									7,666	8,456

TOWER LOADING

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elev (ft)	Description	Qty	Ice Wt (lb)	Ice EPA Length (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient Factor	Vert Ecc (ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
332.0	Generic Torque Arm	1	752	22.6	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.37	141	852
306.8	Telewave ANT150F6-6	1	142	10.5	20.3	2.7	2.7	1.00	1.00	0.0	0.00	7.20	65	151
303.0	Generic Round Side Arm	1	253	7.1	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.18	44	290
296.6	Generic 18' Dipole	1	198	14.4	18.0	3.0	3.0	1.00	1.00	0.0	0.00	7.13	87	209
282.0	Generic Round Side Arm	1	252	7.1	0.0	0.0	0.0	1.00	1.00	0.0	0.00	7.03	43	290
272.0	Generic Torque Arm	1	747	22.4	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.96	133	847
252.0	Generic Flat Side Arm	1	281	8.5	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.81	49	319
252.0	Kathrein Scala 2x3 7500000044	1	531	28.4	7.2	35.8	7.5	1.00	1.00	0.0	0.00	6.81	164	576
223.0	Raycap RDIDC-9181-PF-48	1	61	2.5	1.3	14.0	8.0	0.80	1.00	0.0	0.00	6.58	11	66
223.0	Fujitsu TA08025-B605	3	118	2.6	1.3	15.0	9.1	0.80	0.50	0.0	0.00	6.58	17	400
223.0	Fujitsu TA08025-B604	3	104	2.6	1.3	15.0	7.9	0.80	0.50	0.0	0.00	6.58	17	351
223.0	JMA Wireless MX08FRO665-21	3	243	14.4	6.0	20.0	8.0	0.80	0.64	0.0	0.00	6.58	124	767
223.0	Generic Flat Light Sector Fram	3	609	28.4	0.0	0.0	0.0	0.75	0.75	0.0	0.00	6.58	267	2066
213.8	RFS FIM800CAB-C1D	3	84	1.8	1.3	9.7	8.5	0.80	0.50	0.0	0.00	6.50	12	283
212.0	Generic Round Sector Frame	3	555	25.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	6.48	241	1845
210.7	Quintel QD66512-3D	3	366	15.5	6.0	22.0	9.6	0.80	0.64	0.0	0.00	6.47	131	1195
210.0	Ericsson 800 MHz Radio Filter	3	21	0.7	0.4	4.6	11.0	0.80	0.50	0.0	0.00	6.46	5	69
210.0	Alcatel-Lucent 800MHz RRH	3	104	2.8	1.6	13.0	10.8	0.80	0.67	1.4	34.85	6.48	25	344
210.0	Alcatel-Lucent 1900 MHz 4X45 R	3	116	3.1	2.1	11.1	10.7	0.80	0.67	-1.1	29.80	6.45	27	384
210.0	RFS APXVSPP18-C-A20	3	177	10.0	6.0	11.8	7.0	0.80	0.69	0.0	0.00	6.46	91	564
198.0	Generic Torque Arm	1	739	22.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.36	120	839
182.0	Generic 20' Omni	1	157	10.8	20.0	3.0	3.0	1.00	1.00	0.0	0.00	6.20	57	168
172.0	Generic Round Side Arm	1	250	7.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	6.11	37	287
127.0	Generic Torque Arm	1	727	21.8	0.0	0.0	0.0	1.00	1.00	0.0	0.00	5.60	104	827
70.0	PCTEL GPS-TMG-HR-26N	1	4	0.2	0.4	3.2	3.2	1.00	1.00	0.0	0.00	4.72	1	4
Totals		47	12,583	508.9									2012	13,993

TOWER LOADING

## Discrete Appurtenance Properties 1.0D + 1.0W Service

Elev (ft)	Description	Qty	Wt. (lb)	EPA Length (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient Factor	Vert Ecc (ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
332.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.61	135	500
306.8	Telewave ANT150F6-6	1	41	5.5	20.3	2.7	2.7	1.00	1.00	0.0	0.00	10.37	48	41
303.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.34	46	188
296.6	Generic 18' Dipole	1	55	6.8	18.0	3.0	3.0	1.00	1.00	0.0	0.00	10.27	59	55
282.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.13	45	188
272.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	10.02	128	500
252.0	Generic Flat Side Arm	1	188	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.00	9.81	53	188
252.0	Kathrein Scala 2x3 7500000044	1	225	25.8	7.2	35.8	7.5	1.00	1.00	0.0	0.00	9.81	215	225
223.0	Raycap RDIDC-9181-PF-48	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.00	9.47	12	22
223.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	9.47	19	225
223.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	9.47	19	192
223.0	JMA Wireless MX08FRO665-21	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.00	9.47	154	194
223.0	Generic Flat Light Sector Fram	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.00	9.47	243	1200
213.8	RFS FIM800CAB-C1D	3	53	1.2	1.3	9.7	8.5	0.80	0.50	0.0	0.00	9.36	12	159
212.0	Generic Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.00	9.33	193	900
210.7	Quintel QD66512-3D	3	163	13.6	6.0	22.0	9.6	0.80	0.64	0.0	0.00	9.32	165	489
210.0	Ericsson 800 MHz Radio Filter	3	10	0.4	0.4	4.6	11.0	0.80	0.50	0.0	0.00	9.31	4	30
210.0	Alcatel-Lucent 800MHz RRH	3	53	2.1	1.6	13.0	10.8	0.80	0.67	1.4	38.08	9.33	27	159
210.0	Alcatel-Lucent 1900 MHz 4X45 R	3	60	2.3	2.1	11.1	10.7	0.80	0.67	-1.1	32.45	9.29	29	180
210.0	RFS APXVSPP18-C-A20	3	57	8.0	6.0	11.8	7.0	0.80	0.69	0.0	0.00	9.31	105	171
198.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	9.15	117	500
182.0	Generic 20' Omni	1	55	6.0	20.0	3.0	3.0	1.00	1.00	0.0	0.00	8.94	46	55
172.0	Generic Round Side Arm	1	188	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.00	8.79	39	188
127.0	Generic Torque Arm	1	500	15.0	0.0	0.0	0.0	1.00	1.00	0.0	0.00	8.06	103	500
70.0	PCTEL GPS-TMG-HR-26N	1	1	0.1	0.4	3.2	3.2	1.00	1.00	0.0	0.00	6.80	1	1
Totals		47	7,047	357.2									2,016	7,047

## TOWER LOADING

## Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	% In Wind	Spread On Faces	Bundling	Cluster Dia (in)	Out of Zone	Spacing (in)	Orient Factor	K <sub>a</sub> Override
0.0	306.0	7/8" Coax	1	1.09	0.33	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	306.0	7/8" Coax	2	1.09	0.33	100	2	Individual	0.00	N	1.00	1.00	0.00
0.0	252.0	1 5/8" Coax	1	1.98	0.82	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	220.0	1.60" (40.6mm) Hybrid	1	1.60	2.34	100	3	Individual	0.00	N	1.00	1.00	0.00
0.0	210.0	1 1/4" Hybriflex Cable	3	1.54	1.00	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	70.0	1/2" Coax	1	0.63	0.15	100	1	Individual	0.00	N	1.00	1.00	0.00

SECTION FORCES

1.2D + 1.0W Normal Gust Response Factor (Gh): 0.85  
 117 mph wind with no ice Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Qz (psf)	Af (sf)	Ar (sf)	Ice Ar (sf)	e	Cf	Df	Df	Tiz (in)	Ae (sf)	EPAa (sf)	EPAai (sf)	Wt. (lb)	Ice Wt (lb)	Fst (lb)	Fa (lb)	Force (lb)
20	337	40.51	2.760	13.025	0.00	0.244	2.46	1.00	1.00	0.0	10.46	25.70	0.00	989	0	885	0	885
19	317	39.81	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	741	0	832	0	832
18	297	39.08	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	763	0	816	124	940
17	277	38.31	2.760	13.025	0.00	0.244	2.46	1.00	1.00	0.0	10.46	25.70	0.00	1013	0	837	128	965
16	257	37.50	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	769	0	783	144	927
15	237	36.64	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	784	0	765	196	962
14	217	35.73	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	831	0	746	254	1001
13	197	34.75	2.760	12.534	0.00	0.236	2.48	1.00	1.00	0.0	10.14	25.14	0.00	994	0	743	407	1149
12	177	33.71	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	912	0	704	394	1099
11	157	32.57	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	912	0	681	381	1062
10	137	31.33	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	912	0	655	367	1021
9	117	29.95	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	912	0	626	350	976
8	97	28.38	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	912	0	593	332	925
7	77	26.57	3.050	12.042	0.00	0.233	2.49	1.00	1.00	0.0	10.12	25.19	0.00	931	0	569	313	882
6	65	25.31	0.460	2.442	0.00	0.220	2.53	1.00	1.00	0.0	1.89	4.78	0.00	181	0	103	64	166
5	55	24.13	2.257	11.235	0.00	0.257	2.42	1.00	1.00	0.0	8.92	21.55	0.00	736	0	442	237	679
4	37	21.55	2.708	14.098	0.00	0.255	2.42	1.00	1.00	0.0	11.06	26.79	0.00	916	0	491	266	757
3	17	20.28	2.708	14.098	0.00	0.255	2.42	1.00	1.00	0.0	11.06	26.79	0.00	916	0	462	250	712
2	5	20.28	0.451	2.841	0.00	0.248	2.44	1.00	1.00	0.0	2.13	5.21	0.00	180	0	90	51	140
1	1	20.28	0.903	2.125	0.00	0.311	2.27	1.00	1.00	0.0	2.20	4.98	0.00	164	0	86	37	123
														15,471	0			16,204

1.2D + 1.0W 60° Gust Response Factor (Gh): 0.85  
 117 mph wind with no ice Wind Importance Factor (Iw): 1.00

Sect #	Elev (ft)	Qz (psf)	Af (sf)	Ar (sf)	Ice Ar (sf)	e	Cf	Df	Df	Tiz (in)	Ae (sf)	EPAa (sf)	EPAai (sf)	Wt. (lb)	Ice Wt (lb)	Fst (lb)	Fa (lb)	Force (lb)
20	337	40.51	2.760	13.025	0.00	0.244	2.46	0.80	1.00	0.0	9.91	24.35	0.00	989	0	838	0	838
19	317	39.81	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	741	0	785	0	785
18	297	39.08	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	763	0	771	124	894
17	277	38.31	2.760	13.025	0.00	0.244	2.46	0.80	1.00	0.0	9.91	24.35	0.00	1013	0	793	128	921
16	257	37.50	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	769	0	739	144	883
15	237	36.64	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	784	0	722	196	919
14	217	35.73	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	831	0	704	254	959
13	197	34.75	2.760	12.534	0.00	0.236	2.48	0.80	1.00	0.0	9.59	23.77	0.00	994	0	702	407	1109
12	177	33.71	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	912	0	665	394	1059
11	157	32.57	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	912	0	642	381	1023
10	137	31.33	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	912	0	618	367	984
9	117	29.95	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	912	0	590	350	941
8	97	28.38	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	912	0	560	332	892
7	77	26.57	3.050	12.042	0.00	0.233	2.49	0.80	1.00	0.0	9.51	23.68	0.00	931	0	535	313	848
6	65	25.31	0.460	2.442	0.00	0.220	2.53	0.80	1.00	0.0	1.80	4.54	0.00	181	0	98	64	161
5	55	24.13	2.257	11.235	0.00	0.257	2.42	0.80	1.00	0.0	8.47	20.46	0.00	736	0	420	237	657
4	37	21.55	2.708	14.098	0.00	0.255	2.42	0.80	1.00	0.0	10.52	25.48	0.00	916	0	467	266	733
3	17	20.28	2.708	14.098	0.00	0.255	2.42	0.80	1.00	0.0	10.52	25.48	0.00	916	0	439	250	690
2	5	20.28	0.451	2.841	0.00	0.248	2.44	0.80	1.00	0.0	2.04	4.99	0.00	180	0	86	51	137
1	1	20.28	0.903	2.125	0.00	0.311	2.27	0.80	1.00	0.0	2.02	4.58	0.00	164	0	79	37	116
														15,471	0			15,549

1.2D + 1.0W 90° Gust Response Factor (Gh): 0.85  
 117 mph wind with no ice Wind Importance Factor (Iw): 1.00

















SECTION FORCES

Table with 19 columns: Sect #, Elev (ft), Qz (psf), Ar (sf), Ar (sf), Ice Ar (sf), e, Cr, Dr, Dr, Tiz (in), Ae (sf), EPAa (sf), EPAai (sf), Wt. (lb), Ice Wt (lb), Fst (lb), Fa (lb), Force (lb). Rows 1-10.

39,166 23,695 5,861

1.0D + 1.0W Service Normal  
60 mph Wind with No Ice

Gust Response Factor (Gh): 0.85  
Wind Importance Factor (Iw): 1.00

Table with 19 columns: Sect #, Elev (ft), Qz (psf), Ar (sf), Ar (sf), Ice Ar (sf), e, Cr, Dr, Dr, Tiz (in), Ae (sf), EPAa (sf), EPAai (sf), Wt. (lb), Ice Wt (lb), Fst (lb), Fa (lb), Force (lb). Rows 1-20.

12,892 0 4,261

1.0D + 1.0W Service 60°  
60 mph Wind with No Ice

Gust Response Factor (Gh): 0.85  
Wind Importance Factor (Iw): 1.00

Table with 19 columns: Sect #, Elev (ft), Qz (psf), Ar (sf), Ar (sf), Ice Ar (sf), e, Cr, Dr, Dr, Tiz (in), Ae (sf), EPAa (sf), EPAai (sf), Wt. (lb), Ice Wt (lb), Fst (lb), Fa (lb), Force (lb). Rows 6-20.







SECTION FORCES

Sect #	Elev (ft)	Q <sub>Z</sub> (psf)	A <sub>f</sub> (sf)	A <sub>r</sub> (sf)	Ice A <sub>r</sub> (sf)	e	C <sub>f</sub>	D <sub>f</sub>	D <sub>r</sub>	T <sub>iz</sub> (in)	A <sub>e</sub> (sf)	EPA <sub>a</sub> (sf)	EPA <sub>ai</sub> (sf)	Wt. (lb)	Ice Wt (lb)	F <sub>st</sub> (lb)	F <sub>a</sub> (lb)	Force (lb)	
20	337	10.65	2.760	13.025	0.00	0.244	2.46	1.00	1.00	0.0	10.46	25.70	0.00	824	0	233	0	233	
19	317	10.47	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	617	0	219	0	219	
18	297	10.28	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	636	0	215	33	247	
17	277	10.07	2.760	13.025	0.00	0.244	2.46	1.00	1.00	0.0	10.46	25.70	0.00	844	0	220	34	254	
16	257	9.86	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	641	0	206	38	244	
15	237	9.64	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	653	0	201	52	253	
14	217	9.40	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	693	0	196	67	263	
13	197	9.14	2.760	12.534	0.00	0.236	2.48	1.00	1.00	0.0	10.14	25.14	0.00	829	0	195	107	302	
12	177	8.86	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	760	0	185	104	289	
11	157	8.57	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	760	0	179	100	279	
10	137	8.24	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	760	0	172	96	269	
9	117	7.88	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	760	0	165	92	257	
8	97	7.46	2.760	12.042	0.00	0.228	2.50	1.00	1.00	0.0	9.82	24.58	0.00	760	0	156	87	243	
7	77	6.99	3.050	12.042	0.00	0.233	2.49	1.00	1.00	0.0	10.12	25.19	0.00	776	0	150	82	232	
6	65	6.66	0.460	2.442	0.00	0.220	2.53	1.00	1.00	0.0	1.89	4.78	0.00	151	0	27	17	44	
5	55	6.35	2.257	11.235	0.00	0.257	2.42	1.00	1.00	0.0	8.92	21.55	0.00	613	0	116	62	179	
4	37	5.67	2.708	14.098	0.00	0.255	2.42	1.00	1.00	0.0	11.06	26.79	0.00	764	0	129	70	199	
3	17	5.33	2.708	14.098	0.00	0.255	2.42	1.00	1.00	0.0	11.06	26.79	0.00	764	0	121	66	187	
2	5	5.33	0.451	2.841	0.00	0.248	2.44	1.00	1.00	0.0	2.13	5.21	0.00	150	0	24	13	37	
1	1	5.33	0.903	2.125	0.00	0.311	2.27	1.00	1.00	0.0	2.20	4.99	0.00	137	0	23	10	32	
															12,892	0			4,261

1.0D + 1.0W Service 300° Gust Response Factor (G<sub>h</sub>): 0.85  
 60 mph Wind with No Ice Wind Importance Factor (I<sub>w</sub>): 1.00

Sect #	Elev (ft)	Q <sub>Z</sub> (psf)	A <sub>f</sub> (sf)	A <sub>r</sub> (sf)	Ice A <sub>r</sub> (sf)	e	C <sub>f</sub>	D <sub>f</sub>	D <sub>r</sub>	T <sub>iz</sub> (in)	A <sub>e</sub> (sf)	EPA <sub>a</sub> (sf)	EPA <sub>ai</sub> (sf)	Wt. (lb)	Ice Wt (lb)	F <sub>st</sub> (lb)	F <sub>a</sub> (lb)	Force (lb)	
20	337	10.65	2.760	13.025	0.00	0.244	2.46	0.80	1.00	0.0	9.91	24.35	0.00	824	0	220	0	220	
19	317	10.47	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	617	0	206	0	206	
18	297	10.28	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	636	0	203	33	235	
17	277	10.07	2.760	13.025	0.00	0.244	2.46	0.80	1.00	0.0	9.91	24.35	0.00	844	0	208	34	242	
16	257	9.86	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	641	0	194	38	232	
15	237	9.64	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	653	0	190	52	242	
14	217	9.40	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	693	0	185	67	252	
13	197	9.14	2.760	12.534	0.00	0.236	2.48	0.80	1.00	0.0	9.59	23.77	0.00	829	0	185	107	292	
12	177	8.86	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	760	0	175	104	278	
11	157	8.57	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	760	0	169	100	269	
10	137	8.24	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	760	0	162	96	259	
9	117	7.88	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	760	0	155	92	247	
8	97	7.46	2.760	12.042	0.00	0.228	2.50	0.80	1.00	0.0	9.27	23.20	0.00	760	0	147	87	235	
7	77	6.99	3.050	12.042	0.00	0.233	2.49	0.80	1.00	0.0	9.51	23.68	0.00	776	0	141	82	223	
6	65	6.66	0.460	2.442	0.00	0.220	2.53	0.80	1.00	0.0	1.80	4.54	0.00	151	0	26	17	42	
5	55	6.35	2.257	11.235	0.00	0.257	2.42	0.80	1.00	0.0	8.47	20.46	0.00	613	0	110	62	173	
4	37	5.67	2.708	14.098	0.00	0.255	2.42	0.80	1.00	0.0	10.52	25.48	0.00	764	0	123	70	193	
3	17	5.33	2.708	14.098	0.00	0.255	2.42	0.80	1.00	0.0	10.52	25.48	0.00	764	0	116	66	181	
2	5	5.33	0.451	2.841	0.00	0.248	2.44	0.80	1.00	0.0	2.04	4.99	0.00	150	0	23	13	36	
1	1	5.33	0.903	2.125	0.00	0.311	2.27	0.80	1.00	0.0	2.02	4.58	0.00	137	0	21	10	31	
															12,892	0			4,089

1.0D + 1.0W Service 330° Gust Response Factor (G<sub>h</sub>): 0.85  
 60 mph Wind with No Ice Wind Importance Factor (I<sub>w</sub>): 1.00

Sect #	Elev (ft)	Q <sub>Z</sub> (psf)	A <sub>f</sub> (sf)	A <sub>r</sub> (sf)	Ice A <sub>r</sub> (sf)	e	C <sub>f</sub>	D <sub>f</sub>	D <sub>r</sub>	T <sub>iz</sub> (in)	A <sub>e</sub> (sf)	EPA <sub>a</sub> (sf)	EPA <sub>ai</sub> (sf)	Wt. (lb)	Ice Wt (lb)	F <sub>st</sub> (lb)	F <sub>a</sub> (lb)	Force (lb)
20	337	10.65	2.760	13.025	0.00	0.244	2.46	0.85	1.00	0.0	10.05	24.69	0.00	824	0	224	0	224
19	317	10.47	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	617	0	210	0	210
18	297	10.28	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	636	0	206	33	238
17	277	10.07	2.760	13.025	0.00	0.244	2.46	0.85	1.00	0.0	10.05	24.69	0.00	844	0	211	34	245
16	257	9.86	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	641	0	197	38	235

SECTION FORCES

Sect #	Elev (ft)	Q <sub>z</sub> (psf)	A <sub>f</sub> (sf)	A <sub>r</sub> (sf)	Ice A <sub>r</sub> (sf)	e	C <sub>f</sub>	D <sub>f</sub>	D <sub>r</sub>	T <sub>iz</sub> (in)	A <sub>e</sub> (sf)	EPA <sub>a</sub> (sf)	EPA <sub>ai</sub> (sf)	Wt. (lb)	Ice Wt (lb)	F <sub>st</sub> (lb)	F <sub>a</sub> (lb)	Force (lb)
15	237	9.64	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	653	0	193	52	244
14	217	9.40	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	693	0	188	67	255
13	197	9.14	2.760	12.534	0.00	0.236	2.48	0.85	1.00	0.0	9.72	24.12	0.00	829	0	187	107	294
12	177	8.86	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	760	0	177	104	281
11	157	8.57	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	760	0	171	100	272
10	137	8.24	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	760	0	165	96	261
9	117	7.88	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	760	0	158	92	250
8	97	7.46	2.760	12.042	0.00	0.228	2.50	0.85	1.00	0.0	9.40	23.54	0.00	760	0	149	87	237
7	77	6.99	3.050	12.042	0.00	0.233	2.49	0.85	1.00	0.0	9.66	24.06	0.00	776	0	143	82	225
6	65	6.66	0.460	2.442	0.00	0.220	2.53	0.85	1.00	0.0	1.82	4.60	0.00	151	0	26	17	43
5	55	6.35	2.257	11.235	0.00	0.257	2.42	0.85	1.00	0.0	8.58	20.73	0.00	613	0	112	62	174
4	37	5.67	2.708	14.098	0.00	0.255	2.42	0.85	1.00	0.0	10.66	25.81	0.00	764	0	124	70	194
3	17	5.33	2.708	14.098	0.00	0.255	2.42	0.85	1.00	0.0	10.66	25.81	0.00	764	0	117	66	183
2	5	5.33	0.451	2.841	0.00	0.248	2.44	0.85	1.00	0.0	2.06	5.04	0.00	150	0	23	13	36
1	1	5.33	0.903	2.125	0.00	0.311	2.27	0.85	1.00	0.0	2.07	4.68	0.00	137	0	21	10	31
														12,892	0			4,132

EQUIVALENT LATERAL FORCE METHOD

Spectral Response Acceleration for Short Period ( $S_S$ ):	0.19
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.05
Long-Period Transition Period ( $T_L$ – Seconds):	6
Importance Factor ( $I_a$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.21
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.09
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$ :	0.03
Lower Limit $C_s$ :	0.03
Period based on Rayleigh Method (sec):	0.94
Redundancy Factor ( $\rho$ ):	1.30
Seismic Force Distribution Exponent (k):	1.22
Total Unfactored Dead Load:	19.94 k
Seismic Base Shear (E):	0.80 k

SEISMIC

Load Case: 0.9D - 1.0Ev + 1.0Eh

Seismic

Section	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
20	337.00	824	986,589	0.080	64	708
19	317.00	617	685,867	0.056	44	530
18	297.00	636	652,845	0.053	42	546
17	277.00	844	795,704	0.065	52	725
16	257.00	641	551,780	0.045	36	550
15	237.00	653	509,531	0.041	33	561
14	217.00	693	485,269	0.040	31	595
13	197.00	829	515,837	0.042	33	711
12	177.00	760	415,460	0.034	27	653
11	157.00	760	359,016	0.029	23	653
10	137.00	760	304,121	0.025	20	653
9	117.00	760	250,948	0.020	16	653
8	97.00	760	199,728	0.016	13	653
7	77.00	776	153,912	0.012	10	666
6	64.96	151	24,290	0.002	2	129
5	54.96	613	80,637	0.007	5	526
4	37.00	764	62,045	0.005	4	656
3	17.00	764	24,065	0.002	2	656
2	4.98	150	1,058	0.000	0	129
1	1.48	137	221	0.000	0	118
Generic Torque Arm	332.00	500	587,780	0.048	38	429
Telewave ANT150F6-6	306.80	41	43,780	0.004	3	35
Generic Round Side Arm	303.00	188	197,199	0.016	13	161
Generic 18' Dipole	296.60	55	56,361	0.005	4	47
Generic Round Side Arm	282.00	188	180,683	0.015	12	161
Generic Torque Arm	272.00	500	461,095	0.038	30	429
Generic Flat Side Arm	252.00	188	157,554	0.013	10	161
Kathrein Scala 2x3 7500000044	252.00	225	188,981	0.015	12	193
Raycap RDIDC-9181-PF-48	223.00	22	15,857	0.001	1	19
Fujitsu TA08025-B605	223.00	225	162,911	0.013	11	193
Fujitsu TA08025-B604	223.00	192	138,800	0.011	9	165
JMA Wireless MX08FRO665-21	223.00	194	140,104	0.011	9	166

Generic Flat Light Sector Frame	223.00	1,200	868,859	0.071	56	1,030
RFS FIM800CAB-C1D	213.80	159	109,366	0.009	7	137
Generic Round Sector Frame	212.00	900	612,712	0.050	40	773
Quintel QD66512-3D	210.70	489	330,423	0.027	21	420
Ericsson 800 MHz Radio Filter	210.00	30	20,189	0.002	1	26
Alcatel-Lucent 800MHz RRH	210.00	159	107,004	0.009	7	137
Alcatel-Lucent 1900 MHz 4X45 RRH	210.00	180	121,136	0.010	8	155
RFS APXVSP18-C-A20	210.00	171	115,079	0.009	7	147
Generic Torque Arm	198.00	500	313,221	0.026	20	429
Generic 20' Omni	182.00	55	31,094	0.002	2	47
Generic Round Side Arm	172.00	188	98,953	0.008	6	161
Generic Torque Arm	127.00	500	182,383	0.015	12	429
PCTEL GPS-TMG-HR-26N	70.00	1	106	0.000	0	1
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Totals		19,939	12,300,554	1.000	798	17,120

SEISMIC

Load Case: 1.2D + 1.0Ev + 1.0Eh

Seismic

Section	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
20	337.00	824	986,589	0.080	64	1,023
19	317.00	617	685,867	0.056	44	766
18	297.00	636	652,845	0.053	42	790
17	277.00	844	795,704	0.065	52	1,048
16	257.00	641	551,780	0.045	36	796
15	237.00	653	509,531	0.041	33	811
14	217.00	693	485,269	0.040	31	860
13	197.00	829	515,837	0.042	33	1,029
12	177.00	760	415,460	0.034	27	944
11	157.00	760	359,016	0.029	23	944
10	137.00	760	304,121	0.025	20	944
9	117.00	760	250,948	0.020	16	944
8	97.00	760	199,728	0.016	13	944
7	77.00	776	153,912	0.012	10	963
6	64.96	151	24,290	0.002	2	187
5	54.96	613	80,637	0.007	5	761
4	37.00	764	62,045	0.005	4	948
3	17.00	764	24,065	0.002	2	948
2	4.98	150	1,058	0.000	0	186
1	1.48	137	221	0.000	0	170
Generic Torque Arm	332.00	500	587,780	0.048	38	621
Telewave ANT150F6-6	306.80	41	43,780	0.004	3	51
Generic Round Side Arm	303.00	188	197,199	0.016	13	233
Generic 18' Dipole	296.60	55	56,361	0.005	4	68
Generic Round Side Arm	282.00	188	180,683	0.015	12	233
Generic Torque Arm	272.00	500	461,095	0.038	30	621
Generic Flat Side Arm	252.00	188	157,554	0.013	10	233
Kathrein Scala 2x3 7500000044	252.00	225	188,981	0.015	12	279
Raycap RDIDC-9181-PF-48	223.00	22	15,857	0.001	1	27
Fujitsu TA08025-B605	223.00	225	162,911	0.013	11	279
Fujitsu TA08025-B604	223.00	192	138,800	0.011	9	238
JMA Wireless MX08FRO665-21	223.00	194	140,104	0.011	9	240
Generic Flat Light Sector Frame	223.00	1,200	868,859	0.071	56	1,490
RFS FIM800CAB-C1D	213.80	159	109,366	0.009	7	197
Generic Round Sector Frame	212.00	900	612,712	0.050	40	1,117
Quintel QD66512-3D	210.70	489	330,423	0.027	21	607
Ericsson 800 MHz Radio Filter	210.00	30	20,189	0.002	1	37
Alcatel-Lucent 800MHz RRH	210.00	159	107,004	0.009	7	197
Alcatel-Lucent 1900 MHz 4X45 RRH	210.00	180	121,136	0.010	8	223
RFS APXVSP18-C-A20	210.00	171	115,079	0.009	7	212
Generic Torque Arm	198.00	500	313,221	0.026	20	621
Generic 20' Omni	182.00	55	31,094	0.002	2	68
Generic Round Side Arm	172.00	188	98,953	0.008	6	233
Generic Torque Arm	127.00	500	182,383	0.015	12	621
PCTEL GPS-TMG-HR-26N	70.00	1	106	0.000	0	1
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Totals		19,939	12,300,554	1.000	798	24,752

FORCE/STRESS SUMMARY

Section 1 – Bolt Elevation 0.0 (ft) and Height 2.96 (ft)

Max Compression	Pu		Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use % Controls
	(kip)	Load Case		Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)											
L HPS - 2.88x0.21 + HP3X	-51.44	1.2D + 1.0Di + 1.0Wi 12	0.125	100	100	100	1.19	50.0	76.68	0.00	0.00	0	0	0	0	67 Member X
D SOL - 5/8" SOLID	-2.83	1.2D + 1.0W N	4.126	50	50	50	142.83	36.0	3.40	0.00	0.00	0	0	0	0	Member X

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)	# Bolt	# Hole	Use % Controls
	(kip)	Load Case									
H SAU - 2X1.5X0.1875	6.21	1.2D + 1.0Ev + 1.0Eh N	36.0	58	20.09	0.00	0.00	0.00	0	0	30 Member

Max Splice Forces	Pu (kip)	Load Case	Φ <sub>R<sub>nt</sub></sub> (kip)	Use %	Num Bolts	Bolt Type
Bot Compression	51.86	1.2D + 1.0Di + 1.0Wi 240°	0.00	0	0	

Section 2 – Bolt Elevation 3.0 (ft) and Height 4.04 (ft)

Max Compression	Pu		Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use % Controls
	(kip)	Load Case		Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)											
L HPS - 2.88x0.21 + HP3X	-50.77	1.2D + 1.0Di + 1.0Wi 24	3.917	100	100	100	37.22	50.0	69.30	0.00	0.00	0	0	0	0	73 Member X
H SAU - 2X1.5X0.1875	-0.41	1.2D + 1.0W 90°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	0	0	2 Member Z
D SOL - 5/8" SOLID	-0.30	1.2D + 1.0W N	4.934	50	50	50	170.79	36.0	2.38	0.00	0.00	0	0	0	0	Member X

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)	# Bolt	# Hole	Use % Controls
	(kip)	Load Case									
H SAU - 2X1.5X0.1875	1.08	1.2D + 1.0Ev + 1.0Eh N	36.0	58	20.09	0.00	0.00	0.00	0	0	5 Member
D SOL - 5/8" SOLID	1.45	1.2D + 1.0W 90°	36.0	58	9.94	0.00	0.00	0.00	0	0	14 Member

Max Splice Forces	Pu (kip)	Load Case	Φ <sub>R<sub>nt</sub></sub> (kip)	Use %	Num Bolts	Bolt Type

Section 3 – Bolt Elevation 7.0 (ft) and Height 20.00 (ft)

Max Compression	Pu		Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use % Controls
	(kip)	Load Case		Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)											
L HPS - 2.88x0.21 + HP3X	-50.01	1.2D + 1.0Di + 1.0Wi 24	3.95	100	100	100	37.53	50.0	69.18	0.00	0.00	0	0	0	0	72 Member X
H SAU - 2X1.5X0.1875	-0.76	1.2D + 1.0W 60°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	0	0	4 Member Z
D SOL - 5/8" SOLID	-0.15	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	0	Member X

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)	# Bolt	# Hole	Use % Controls
	(kip)	Load Case									
H SAU - 2X1.5X0.1875	2.22	1.0D + 1.0W Service 180°	36.0	58	20.09	0.00	0.00	0.00	0	0	11 Member
D SOL - 5/8" SOLID	1.52	1.2D + 1.0W 90°	36.0	58	9.94	0.00	0.00	0.00	0	0	15 Member

Max Splice Forces	Pu (kip)	Load Case	Φ <sub>R<sub>nt</sub></sub> (kip)	Use %	Num Bolts	Bolt Type

Section 4 – Bolt Elevation 27.0 (ft) and Height 20.00 (ft)

Max Compression	Pu		Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use % Controls
	(kip)	Load Case		Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)											
L HPS - 2.88x0.21 + HP3X	-45.71	1.2D + 1.0Di + 1.0Wi 90	3.95	100	100	100	37.53	50.0	69.18	0.00	0.00	0	0	0	0	66 Member X
H SAU - 2X1.5X0.1875	-0.47	1.2D + 1.0W 60°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	0	0	2 Member Z
D SOL - 5/8" SOLID	-0.03	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	0	Member X

FORCE/STRESS SUMMARY

	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
Max Tension Member	2.09	1.2D + 1.0Ev + 1.0Eh N	36.0	58	20.09	0.00	0.00	0.00	0	0	10	Member
D SOL - 5/8" SOLID	0.87	1.2D + 1.0W 60°	36.0	58	9.94	0.00	0.00	0.00	0	0	8	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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Section 5 – Bolt Elevation 47.0 (ft) and Height 15.93 (ft)

	Pu		Len (ft)	Bracing %			F' <sub>y</sub> (ksi)	Shear	Bear	# Bolt	# Hole	Use %	Controls		
	(kip)	Load Case		Φ <sub>c</sub> P <sub>n</sub> (kip)	ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)									
Max Compression	-45.15	1.2D + 1.0Di + 1.0Wi 90	3.95	100	100	100	37.53	50.0	69.18	0.00	0.00	0	0	65	Member X
L HPS - 2.88x0.21 + HP3X	-0.60	1.2D + 1.0W N	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	3	Member Z
H SAU - 2X1.5X0.1875	-0.21	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X
D SOL - 5/8" SOLID															

	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
Max Tension Member	2.07	1.2D + 1.0Ev + 1.0Eh N	36.0	58	20.09	0.00	0.00	0.00	0	0	10	Member
H SAU - 2X1.5X0.1875	1.10	1.2D + 1.0W 240°	36.0	58	9.94	0.00	0.00	0.00	0	0	11	Member
D SOL - 5/8" SOLID												

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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Section 6 – Bolt Elevation 62.9 (ft) and Height 4.07 (ft)

	Pu		Len (ft)	Bracing %			F' <sub>y</sub> (ksi)	Shear	Bear	# Bolt	# Hole	Use %	Controls		
	(kip)	Load Case		Φ <sub>c</sub> P <sub>n</sub> (kip)	ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)									
Max Compression	-43.80	1.2D + 1.0Di + 1.0Wi 60	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	68	Member X
L PST - 2-1/2" DIA PIPE	-0.11	1.2D + 1.0W N	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	0	Member Z
H SAU - 2X1.5X0.1875	-0.32	1.2D + 1.0W N	4.96	50	50	50	171.69	36.0	2.35	0.00	0.00	0	0	0	Member X
D SOL - 5/8" SOLID															

	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
Max Tension Member	1.09	1.2D + 1.0Ev + 1.0Eh N	36.0	58	20.09	0.00	0.00	0.00	0	0	5	Member
H SAU - 2X1.5X0.1875	0.90	1.2D + 1.0W N	36.0	58	9.94	0.00	0.00	0.00	0	0	9	Member
D SOL - 5/8" SOLID												

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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Section 7 – Bolt Elevation 67.0 (ft) and Height 20.00 (ft)

	Pu		Len (ft)	Bracing %			F' <sub>y</sub> (ksi)	Shear	Bear	# Bolt	# Hole	Use %	Controls		
	(kip)	Load Case		Φ <sub>c</sub> P <sub>n</sub> (kip)	ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)									
Max Compression	-42.20	1.2D + 1.0Di + 1.0Wi 60	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	66	Member X
L PST - 2-1/2" DIA PIPE	-0.58	1.2D + 1.0W 210°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	3	Member Z
H SAU - 2X1.5X0.1875	-2.17	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X
D SOL - 5/8" SOLID															

	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
Max Tension Member	2.67	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0	0	13	Member
H SAU - 2X1.5X0.1875	1.07	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	10	Member
D SOL - 5/8" SOLID												

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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FORCE/STRESS SUMMARY

Section 8 – Bolt Elevation 87.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use %	Controls
				X	Y	Z				Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)						
L PST - 2-1/2" DIA PIPE	-42.18	1.2D + 1.0Di + 1.0Wi 12	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	66	Member X		
H SAU - 2X1.5X0.1875	-0.38	1.2D + 1.0W 90°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	2	Member Z		
D SOL - 5/8" SOLID	-0.22	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X		

Max Tension Member	Pu (kip)	Load Case	F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)	Blk Shear		# Bolt	# Hole	Use %	Controls
								Φ <sub>t</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)				
H SAU - 2X1.5X0.1875	2.75	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0	0	13	Member	
D SOL - 5/8" SOLID	0.85	1.2D + 1.0W 240°	36.0	58	9.94	0.00	0.00	0.00	0	0	8	Member	

Max Splice Forces	Pu (kip)	Load Case	Φ <sub>R<sub>nt</sub></sub> (kip)	Use %	Num Bolts	Bolt Type

Section 9 – Bolt Elevation 107.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use %	Controls
				X	Y	Z				Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)						
L PST - 2-1/2" DIA PIPE	-43.19	1.2D + 1.0W 120°	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	67	Member X		
H SAU - 2X1.5X0.1875	-2.26	1.2D + 1.0Di + 1.0Wi 24	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	12	Member Z		
D SOL - 5/8" SOLID	-2.22	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X		

Max Tension Member	Pu (kip)	Load Case	F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)	Blk Shear		# Bolt	# Hole	Use %	Controls
								Φ <sub>t</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)				
H SAU - 2X1.5X0.1875	2.87	1.2D + 1.0W 60°	36.0	58	20.09	0.00	0.00	0.00	0	0	14	Member	
D SOL - 5/8" SOLID	2.30	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	23	Member	

Max Splice Forces	Pu (kip)	Load Case	Φ <sub>R<sub>nt</sub></sub> (kip)	Use %	Num Bolts	Bolt Type

Section 10 – Bolt Elevation 127.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use %	Controls
				X	Y	Z				Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)						
L PST - 2-1/2" DIA PIPE	-42.85	1.2D + 1.0W 120°	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	67	Member X		
H SAU - 2X1.5X0.1875	-1.33	1.2D + 1.0W N	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	7	Member Z		
D SOL - 5/8" SOLID	-1.52	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X		

Max Tension Member	Pu (kip)	Load Case	F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)	Blk Shear		# Bolt	# Hole	Use %	Controls
								Φ <sub>t</sub> P <sub>n</sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)				
H SAU - 2X1.5X0.1875	2.32	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0	0	11	Member	
D SOL - 5/8" SOLID	2.51	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	25	Member	

Max Splice Forces	Pu (kip)	Load Case	Φ <sub>R<sub>nt</sub></sub> (kip)	Use %	Num Bolts	Bolt Type

Section 11 – Bolt Elevation 147.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %			KL/R	F <sub>y</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear		Bear		# Bolt	# Hole	Use %	Controls
				X	Y	Z				Φ <sub>R<sub>nv</sub></sub> (kip)	Φ <sub>R<sub>n</sub></sub> (kip)						
L PST - 2-1/2" DIA PIPE	-36.45	1.2D + 1.0Di + 1.0Wi 12	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	57	Member X		
H SAU - 2X1.5X0.1875	-1.00	1.2D + 1.0W 210°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	5	Member Z		
D SOL - 5/8" SOLID	-2.11	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X		

FORCE/STRESS SUMMARY

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
H SAU - 2X1.5X0.1875	2.62	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0	0	13	Member
D SOL - 5/8" SOLID	1.77	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	17	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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Section 12 – Bolt Elevation 167.0 (ft) and Height 20.00 (ft)

Max Compression	Pu		Len (ft)	Bracing %			F' <sub>y</sub> (ksi)	Shear	Bear	# Bolt	# Hole	Use %	Controls		
	(kip)	Load Case		Φ <sub>c</sub> P <sub>n</sub> (kip)	ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)									
L PST - 2-1/2" DIA PIPE	-35.89	1.2D + 1.0Di + 1.0Wi N	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	56	Member X
H SAU - 2X1.5X0.1875	-0.60	1.2D + 1.0W 180°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	3	Member Z
D SOL - 5/8" SOLID	-1.87	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
H SAU - 2X1.5X0.1875	2.75	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0	0	13	Member
D SOL - 5/8" SOLID	1.14	1.2D + 1.0W 180°	36.0	58	9.94	0.00	0.00	0.00	0	0	11	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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Section 13 – Bolt Elevation 187.0 (ft) and Height 20.00 (ft)

Max Compression	Pu		Len (ft)	Bracing %			F' <sub>y</sub> (ksi)	Shear	Bear	# Bolt	# Hole	Use %	Controls		
	(kip)	Load Case		Φ <sub>c</sub> P <sub>n</sub> (kip)	ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)									
L PST - 2-1/2" DIA PIPE	-34.65	1.2D + 1.0Di + 1.0Wi 90	0.125	100	100	100	1.58	50.0	76.67	0.00	0.00	0	0	45	Member X
H SAU - 2X1.5X0.1875	-5.72	1.2D + 1.0W N	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	30	Member Z
D SOL - 3/4" SOLID	-0.75	1.2D + 1.0W N	4.96	50	50	50	142.85	36.0	4.89	0.00	0.00	0	0	0	Member X

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
L PST - 2-1/2" DIA PIPE	3.09	1.2D + 1.0W 180°	50.0	65	76.68	0.00	0.00	0.00	0	0	4	Member
H SAU - 2X1.5X0.1875	12.74	1.2D + 1.0W 180°	36.0	58	20.09	0.00	0.00	0.00	0	0	63	Member
D SOL - 3/4" SOLID	6.36	1.2D + 1.0W 210°	36.0	58	14.31	0.00	0.00	0.00	0	0	44	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR <sub>nt</sub> (kip)	Use %	Num Bolts	Bolt Type
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Section 14 – Bolt Elevation 207.0 (ft) and Height 20.00 (ft)

Max Compression	Pu		Len (ft)	Bracing %			F' <sub>y</sub> (ksi)	Shear	Bear	# Bolt	# Hole	Use %	Controls		
	(kip)	Load Case		Φ <sub>c</sub> P <sub>n</sub> (kip)	ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)									
L PST - 2-1/2" DIA PIPE	-36.68	1.2D + 1.0W 180°	3.95	100	100	100	50.05	50.0	63.85	0.00	0.00	0	0	57	Member X
H SAU - 2X1.5X0.1875	-2.80	1.2D + 1.0W 90°	3	100	100	100	72.67	36.0	18.61	0.00	0.00	0	0	15	Member Z
D SOL - 5/8" SOLID	-0.29	1.2D + 1.0W N	4.96	50	50	50	171.70	36.0	2.35	0.00	0.00	0	0	0	Member X

Max Tension Member	Pu		F <sub>y</sub> (ksi)	F <sub>u</sub> (ksi)	Φ <sub>c</sub> P <sub>n</sub> (kip)	Shear	Bear	Blk Shear	# Bolt	# Hole	Use %	Controls
	(kip)	Load Case				ΦR <sub>nv</sub> (kip)	ΦR <sub>n</sub> (kip)	Φ <sub>t</sub> P <sub>n</sub> (kip)				
L PST - 2-1/2" DIA PIPE	18.02	1.2D + 1.0W 240°	50.0	65	76.68	0.00	0.00	0.00	0	0	23	Member
H SAU - 2X1.5X0.1875	3.09	1.2D + 1.0W 120°	36.0	58	20.09	0.00	0.00	0.00	0	0	15	Member
D SOL - 5/8" SOLID	6.03	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	60	Member



**FORCE/STRESS SUMMARY**

Max Splice Forces	Pu (kip)	Load Case	$\Phi R_{nt}$ (kip)	Use %	Num Bolts	Bolt Type
Top Tension	17.92	1.2D + 1.0W 240°	0.00	0	0	

Section 15 – Bolt Elevation 227.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %	$F'_y$ (ksi)	$\Phi_c P_n$ (kip)	$\Phi R_{nv}$ (kip)	$\Phi R_n$ (kip)	Shear	Bear	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	-35.81	1.2D + 1.0W 210°	3.95	100 100 100	50.05	50.0	63.85	0.00	0.00	0.00	0	0	56	Member X
H SAU - 2X1.5X0.1875	-0.07	1.2D + 1.0W 90°	3	100 100 100	72.67	36.0	18.61	0.00	0.00	0.00	0	0	0	Member Z
D SOL - 5/8" SOLID	-0.73	1.2D + 1.0W N	4.96	50 50 50	171.70	36.0	2.35	0.00	0.00	0.00	0	0	0	Member X

Max Tension Member	Pu (kip)	Load Case	$F_y$ (ksi)	$F_u$ (ksi)	$\Phi_c P_n$ (kip)	$\Phi R_{nv}$ (kip)	$\Phi R_n$ (kip)	Blk Shear	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	20.13	1.2D + 1.0W 240°	50.0	65	76.68	0.00	0.00		0	0	26	Member
H SAU - 2X1.5X0.1875	2.70	1.2D + 1.0Di + 1.0Wi N	36.0	58	20.09	0.00	0.00	0.00	0	0	13	Member
D SOL - 5/8" SOLID	0.28	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	2	Member

Max Splice Forces	Pu (kip)	Load Case	$\Phi R_{nt}$ (kip)	Use %	Num Bolts	Bolt Type
Top Tension	18.82	1.2D + 1.0W 240°	0.00	0	0	
Bot Tension	17.92	1.2D + 1.0W 240°	90.30	20	3	0.75" A325

Section 16 – Bolt Elevation 247.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %	$F'_y$ (ksi)	$\Phi_c P_n$ (kip)	$\Phi R_{nv}$ (kip)	$\Phi R_n$ (kip)	Shear	Bear	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	-35.80	1.2D + 1.0W 180°	3.95	100 100 100	50.05	50.0	63.85	0.00	0.00	0.00	0	0	56	Member X
H SAU - 2X1.5X0.1875	-3.38	1.2D + 1.0W 210°	3	100 100 100	72.67	36.0	18.61	0.00	0.00	0.00	0	0	18	Member Z
D SOL - 5/8" SOLID	-0.18	1.2D + 1.0W N	4.96	50 50 50	171.70	36.0	2.35	0.00	0.00	0.00	0	0	0	Member X

Max Tension Member	Pu (kip)	Load Case	$F_y$ (ksi)	$F_u$ (ksi)	$\Phi_c P_n$ (kip)	$\Phi R_{nv}$ (kip)	$\Phi R_n$ (kip)	Blk Shear	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	18.58	1.2D + 1.0W 120°	50.0	65	76.68	0.00	0.00		0	0	24	Member
H SAU - 2X1.5X0.1875	2.62	1.2D + 1.0Di + 1.0Wi 120°	36.0	58	20.09	0.00	0.00	0.00	0	0	13	Member
D SOL - 5/8" SOLID	3.23	1.2D + 1.0W 210°	36.0	58	9.94	0.00	0.00	0.00	0	0	32	Member

Max Splice Forces	Pu (kip)	Load Case	$\Phi R_{nt}$ (kip)	Use %	Num Bolts	Bolt Type
Top Tension	2.31	1.2D + 1.0W 240°	0.00	0	0	
Bot Tension	18.82	1.2D + 1.0W 240°	90.30	21	3	0.75" A325

Section 17 – Bolt Elevation 267.0 (ft) and Height 20.00 (ft)

Max Compression	Pu (kip)	Load Case	Len (ft)	Bracing %	$F'_y$ (ksi)	$\Phi_c P_n$ (kip)	$\Phi R_{nv}$ (kip)	$\Phi R_n$ (kip)	Shear	Bear	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	-12.21	1.2D + 1.0Di + 1.0Wi 24	3.95	100 100 100	50.05	50.0	63.85	0.00	0.00	0.00	0	0	19	Member X
H SAE - 2X2X0.25	-1.22	1.2D + 1.0W N	3	100 100 100	59.85	36.0	30.03	0.00	0.00	0.00	0	0	4	Member Z
D SOL - 7/8" SOLID	-1.85	1.2D + 1.0W N	4.96	50 50 50	122.47	36.0	8.85	0.00	0.00	0.00	0	0	0	Member X

Max Tension Member	Pu (kip)	Load Case	$F_y$ (ksi)	$F_u$ (ksi)	$\Phi_c P_n$ (kip)	$\Phi R_{nv}$ (kip)	$\Phi R_n$ (kip)	Blk Shear	# Bolt	# Hole	Use %	Controls
L PST - 2-1/2" DIA PIPE	6.23	1.2D + 1.0W 120°	50.0	65	76.68	0.00	0.00		0	0	8	Member
H SAE - 2X2X0.25	7.41	1.2D + 1.0W 300°	36.0	58	30.46	0.00	0.00	0.00	0	0	24	Member
D SOL - 7/8" SOLID	1.39	1.2D + 1.0W 90°	36.0	58	19.48	0.00	0.00	0.00	0	0	7	Member

Max Splice Forces	Pu (kip)	Load Case	$\Phi R_{nt}$ (kip)	Use %	Num Bolts	Bolt Type

## FORCE/STRESS SUMMARY

	Pu	Load Case	Len	Bracing %	F <sub>y</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Shear	Bear	#	#	Use	Controls
	(kip)		(ft)	X Y Z	(ksi)	(kip)	(kip)	(kip)			Bolt	Hole	%	
Top Tension	6.68	1.2D + 1.0W 240°	0.00	0	0									
Bot Tension	2.31	1.2D + 1.0W 240°	90.30	3	3	0.75"	A325							

## Section 18 – Bolt Elevation 287.0 (ft) and Height 20.00 (ft)

	Pu	Load Case	Len	Bracing %	F <sub>y</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Shear	Bear	#	#	Use	Controls
	(kip)		(ft)	X Y Z	(ksi)	(kip)	(kip)	(kip)			Bolt	Hole	%	
Max Compression														
L PST - 2-1/2" DIA PIPE	-15.56	1.2D + 1.0W 180°	3.95	100 100 100	50.05	50.0	63.85	0.00	0.00	0.00	0	0	24	Member X
D SOL - 5/8" SOLID	-0.63	1.2D + 1.0W N	4.96	50 50 50	171.70	36.0	2.35	0.00	0.00	0.00	0	0	0	Member X

	Pu	Load Case	F <sub>y</sub>	F <sub>u</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Φ <sub>t</sub> P <sub>n</sub>	Blk Shear	#	#	Use	Controls
	(kip)		(ksi)	(ksi)	(kip)	(kip)	(kip)	(kip)		Bolt	Hole	%	
Max Tension Member													
L PST - 2-1/2" DIA PIPE	8.57	1.2D + 1.0W 120°	50.0	65	76.68	0.00	0.00	0.00	0.00	0	0	11	Member
H SAU - 2X1.5X0.1875	1.42	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0.00	0	0	7	Member
D SOL - 5/8" SOLID	0.13	1.2D + 1.0W 240°	36.0	58	9.94	0.00	0.00	0.00	0.00	0	0	1	Member

	Pu	Load Case	Φ <sub>R<sub>nt</sub></sub>	Use	Num	Bolt Type
	(kip)		(kip)	%	Bolts	
Max Splice Forces						
Top Tension	8.36	1.2D + 1.0W 240°	0.00	0	0	
Bot Tension	6.68	1.2D + 1.0W 240°	90.30	7	3	0.75" A325

## Section 19 – Bolt Elevation 307.0 (ft) and Height 20.00 (ft)

	Pu	Load Case	Len	Bracing %	F <sub>y</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Shear	Bear	#	#	Use	Controls
	(kip)		(ft)	X Y Z	(ksi)	(kip)	(kip)	(kip)			Bolt	Hole	%	
Max Compression														
L PST - 2-1/2" DIA PIPE	-15.34	1.2D + 1.0W 180°	3.95	100 100 100	50.05	50.0	63.85	0.00	0.00	0.00	0	0	24	Member X
H SAU - 2X1.5X0.1875	-0.70	1.2D + 1.0W N	3	100 100 100	72.67	36.0	18.61	0.00	0.00	0.00	0	0	3	Member Z
D SOL - 5/8" SOLID	-1.06	1.2D + 1.0W N	4.96	50 50 50	171.70	36.0	2.35	0.00	0.00	0.00	0	0	0	Member X

	Pu	Load Case	F <sub>y</sub>	F <sub>u</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Φ <sub>t</sub> P <sub>n</sub>	Blk Shear	#	#	Use	Controls
	(kip)		(ksi)	(ksi)	(kip)	(kip)	(kip)	(kip)		Bolt	Hole	%	
Max Tension Member													
L PST - 2-1/2" DIA PIPE	8.14	1.2D + 1.0W 120°	50.0	65	76.68	0.00	0.00	0.00	0.00	0	0	10	Member
H SAU - 2X1.5X0.1875	1.33	1.2D + 1.0W N	36.0	58	20.09	0.00	0.00	0.00	0.00	0	0	6	Member
D SOL - 5/8" SOLID	0.92	1.2D + 1.0W 120°	36.0	58	9.94	0.00	0.00	0.00	0.00	0	0	9	Member

	Pu	Load Case	Φ <sub>R<sub>nt</sub></sub>	Use	Num	Bolt Type
	(kip)		(kip)	%	Bolts	
Max Splice Forces						
Top Tension	0.27	1.2D + 1.0W 240°	0.00	0	0	
Bot Tension	8.36	1.2D + 1.0W 240°	90.30	9	3	0.75" A325

## Section 20 – Bolt Elevation 327.0 (ft) and Height 20.00 (ft)

	Pu	Load Case	Len	Bracing %	F <sub>y</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Shear	Bear	#	#	Use	Controls
	(kip)		(ft)	X Y Z	(ksi)	(kip)	(kip)	(kip)			Bolt	Hole	%	
Max Compression														
L PST - 2-1/2" DIA PIPE	-2.55	1.2D + 1.0W N	3.95	100 100 100	50.05	50.0	63.85	0.00	0.00	0.00	0	0	3	Member X
H SAE - 2X2X0.25	-1.84	1.2D + 1.0W 120°	3	100 100 100	59.85	36.0	30.03	0.00	0.00	0.00	0	0	6	Member Z
D SOL - 7/8" SOLID	-0.18	1.2D + 1.0W N	4.96	50 50 50	122.47	36.0	8.85	0.00	0.00	0.00	0	0	0	Member X

	Pu	Load Case	F <sub>y</sub>	F <sub>u</sub>	Φ <sub>c</sub> P <sub>n</sub>	Φ <sub>R<sub>nv</sub></sub>	Φ <sub>R<sub>n</sub></sub>	Φ <sub>t</sub> P <sub>n</sub>	Blk Shear	#	#	Use	Controls
	(kip)		(ksi)	(ksi)	(kip)	(kip)	(kip)	(kip)		Bolt	Hole	%	
Max Tension Member													
L PST - 2-1/2" DIA PIPE	1.78	1.2D + 1.0W 60°	50.0	65	76.68	0.00	0.00	0.00	0.00	0	0	2	Member
H SAE - 2X2X0.25	3.60	1.2D + 1.0W 60°	36.0	58	30.46	0.00	0.00	0.00	0.00	0	0	11	Member
D SOL - 7/8" SOLID	1.20	1.2D + 1.0W 120°	36.0	58	19.48	0.00	0.00	0.00	0.00	0	0	6	Member

	Pu	Load Case	Φ <sub>R<sub>nt</sub></sub>	Use	Num	Bolt Type
	(kip)		(kip)	%	Bolts	
Max Splice Forces						
Bot Tension	0.27	1.2D + 1.0W 240°	90.30	0	3	0.75" A325

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down			
					*Fx (kip)	*Fy (kip)	*Fz (kip)	
1.2D + 1.0W Normal	1.73	0.00	0	1	0.00	40.96	-3.15	
	1.73	0.00	120	1a	-1.48	22.21	0.97	
	1.73	0.00	240	1b	1.51	23.19	0.94	
	172.00	-18.00	0	A1	0.00	-0.44	0.54	
	172.00	5.00	120	A1a	6.33	-4.40	-3.92	
	172.00	11.00	240	A1b	-6.37	-4.16	-3.94	
	230.00	-18.00	0	A2	0.00	-2.23	1.47	
	230.00	10.00	120	A2a	14.57	-16.09	-9.33	
	230.00	11.00	240	A2b	-14.52	-15.96	-9.31	
	302.00	-21.00	0	A3	0.00	-2.77	1.99	
	302.00	8.00	120	A3a	5.41	-6.59	-3.77	
	302.00	21.00	240	A3b	-5.44	-6.35	-3.77	
	1.2D + 1.0W 60°	1.73	0.00	0	1	0.04	35.63	-2.74
		1.73	0.00	120	1a	-2.28	35.68	1.42
1.73		0.00	240	1b	1.03	14.07	0.63	
172.00		-18.00	0	A1	-0.23	-2.26	3.08	
172.00		5.00	120	A1a	2.57	-1.84	-1.74	
172.00		11.00	240	A1b	-8.17	-5.23	-4.72	
230.00		-18.00	0	A2	-0.76	-6.47	5.57	
230.00		10.00	120	A2a	4.47	-5.75	-3.43	
230.00		11.00	240	A2b	-18.64	-19.96	-10.76	
302.00		-21.00	0	A3	-0.57	-4.94	4.02	
302.00		8.00	120	A3a	3.25	-4.57	-2.51	
302.00		21.00	240	A3b	-7.08	-7.80	-4.09	
1.2D + 1.0W 90°		1.73	0.00	0	1	0.13	29.85	-2.30
		1.73	0.00	120	1a	-2.62	39.50	1.50
	1.73	0.00	240	1b	1.21	17.05	0.67	
	172.00	-18.00	0	A1	-0.29	-3.84	5.28	
	172.00	5.00	120	A1a	0.99	-0.72	-0.68	
	172.00	11.00	240	A1b	-7.72	-4.91	-4.34	
	230.00	-18.00	0	A2	-0.97	-11.87	11.05	
	230.00	10.00	120	A2a	1.81	-2.72	-1.45	
	230.00	11.00	240	A2b	-17.91	-18.90	-9.86	
	302.00	-21.00	0	A3	-0.70	-6.00	5.24	
	302.00	8.00	120	A3a	2.15	-3.19	-1.55	
	302.00	21.00	240	A3b	-6.70	-7.21	-3.56	
	1.2D + 1.0W 120°	1.73	0.00	0	1	0.10	22.04	-1.69
		1.73	0.00	120	1a	-2.76	42.00	1.61
1.73		0.00	240	1b	1.59	23.31	0.71	
172.00		-18.00	0	A1	-0.23	-5.36	7.42	
172.00		5.00	120	A1a	0.39	-0.24	-0.22	
172.00		11.00	240	A1b	-6.49	-4.08	-3.48	
230.00		-18.00	0	A2	-0.83	-17.59	16.81	
230.00		10.00	120	A2a	0.99	-1.61	-0.57	
230.00		11.00	240	A2b	-14.92	-15.49	-7.68	
302.00		-21.00	0	A3	-0.57	-6.97	6.40	
302.00		8.00	120	A3a	1.59	-2.34	-0.92	
302.00		21.00	240	A3b	-5.82	-6.15	-2.72	
1.2D + 1.0W 180°		1.73	0.00	0	1	-0.02	13.10	-1.21
		1.73	0.00	120	1a	-2.45	37.03	1.31
	1.73	0.00	240	1b	2.47	37.04	1.30	
	172.00	-18.00	0	A1	0.00	-6.68	9.28	
	172.00	5.00	120	A1a	2.62	-1.70	-1.25	
	172.00	11.00	240	A1b	-2.61	-1.60	-1.25	
	230.00	-18.00	0	A2	0.00	-22.31	21.34	
	230.00	10.00	120	A2a	4.91	-5.41	-1.98	
	230.00	11.00	240	A2b	-4.90	-5.38	-1.98	
	302.00	-21.00	0	A3	0.00	-8.68	8.06	
	302.00	8.00	120	A3a	3.67	-4.41	-1.48	
	302.00	21.00	240	A3b	-3.69	-4.25	-1.50	
	1.2D + 1.0W 210°	1.73	0.00	0	1	-0.01	16.23	-1.41
		1.73	0.00	120	1a	-2.13	31.27	1.03
1.73		0.00	240	1b	2.65	40.43	1.52	
172.00		-18.00	0	A1	0.11	-6.37	8.84	
172.00		5.00	120	A1a	4.63	-3.07	-2.34	
172.00		11.00	240	A1b	-1.00	-0.61	-0.47	
230.00		-18.00	0	A2	0.44	-21.33	20.45	
230.00		10.00	120	A2a	9.95	-10.41	-4.65	

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down			
					*Fx (kip)	*Fy (kip)	*Fz (kip)	
1.2D + 1.0W 240°	230.00	11.00	240	A2b	-2.07	-2.60	-0.79	
	302.00	-21.00	0	A3	0.29	-8.05	7.49	
	302.00	8.00	120	A3a	4.81	-5.41	-1.99	
	302.00	21.00	240	A3b	-2.33	-2.94	-1.03	
	1.73	0.00	0	1	-0.08	22.56	-1.82	
	1.73	0.00	120	1a	-1.57	22.19	0.76	
	1.73	0.00	240	1b	2.77	42.68	1.65	
	172.00	-18.00	0	A1	0.23	-5.34	7.41	
	172.00	5.00	120	A1a	6.43	-4.29	-3.44	
	172.00	11.00	240	A1b	-0.36	-0.20	-0.21	
	230.00	-18.00	0	A2	0.82	-17.55	16.78	
	230.00	10.00	120	A2a	14.93	-15.58	-7.69	
	230.00	11.00	240	A2b	-0.98	-1.59	-0.56	
	302.00	-21.00	0	A3	0.57	-6.88	6.32	
1.2D + 1.0W 300°	302.00	8.00	120	A3a	5.74	-6.30	-2.67	
	302.00	21.00	240	A3b	-1.54	-2.16	-0.89	
	1.73	0.00	0	1	-0.02	35.66	-2.74	
	1.73	0.00	120	1a	-1.04	13.95	0.61	
	1.73	0.00	240	1b	2.28	36.05	1.45	
	172.00	-18.00	0	A1	0.23	-2.22	3.03	
	172.00	5.00	120	A1a	8.13	-5.51	-4.69	
	172.00	11.00	240	A1b	-2.55	-1.71	-1.73	
	230.00	-18.00	0	A2	0.76	-6.46	5.55	
	230.00	10.00	120	A2a	18.72	-20.14	-10.81	
	230.00	11.00	240	A2b	-4.44	-5.69	-3.41	
	302.00	-21.00	0	A3	0.57	-4.89	3.98	
	302.00	8.00	120	A3a	7.03	-8.05	-4.06	
	302.00	21.00	240	A3b	-3.24	-4.37	-2.50	
1.2D + 1.0W 330°	1.73	0.00	0	1	-0.02	39.28	-3.01	
	1.73	0.00	120	1a	-1.18	16.48	0.70	
	1.73	0.00	240	1b	1.95	30.57	1.27	
	172.00	-18.00	0	A1	0.10	-1.00	1.32	
	172.00	5.00	120	A1a	7.72	-5.28	-4.57	
	172.00	11.00	240	A1b	-4.52	-3.01	-2.95	
	230.00	-18.00	0	A2	0.37	-3.36	2.52	
	230.00	10.00	120	A2a	17.85	-19.38	-10.78	
	230.00	11.00	240	A2b	-9.35	-10.76	-6.49	
	302.00	-21.00	0	A3	0.29	-3.55	2.67	
	302.00	8.00	120	A3a	6.49	-7.58	-4.07	
	302.00	21.00	240	A3b	-4.33	-5.43	-3.28	
	1.2D + 1.0Di + 1.0Wi Normal	1.73	0.00	0	1	0.00	49.83	1.46
		1.73	0.00	120	1a	1.81	42.96	-0.94
1.73		0.00	240	1b	-1.82	42.53	-0.96	
172.00		-18.00	0	A1	0.00	-3.17	5.15	
172.00		5.00	120	A1a	7.02	-4.18	-4.36	
172.00		11.00	240	A1b	-7.01	-3.90	-4.35	
230.00		-18.00	0	A2	0.00	-6.69	6.86	
230.00		10.00	120	A2a	11.80	-11.75	-7.74	
230.00		11.00	240	A2b	-11.77	-11.66	-7.72	
302.00		-21.00	0	A3	0.00	-5.44	5.07	
302.00		8.00	120	A3a	6.59	-7.06	-4.50	
302.00		21.00	240	A3b	-6.61	-6.78	-4.51	
1.2D + 1.0Di + 1.0Wi 60°		1.73	0.00	0	1	0.12	47.85	1.65
		1.73	0.00	120	1a	1.42	49.09	-0.71
	1.73	0.00	240	1b	-1.94	39.17	-1.14	
	172.00	-18.00	0	A1	-0.27	-3.90	6.14	
	172.00	5.00	120	A1a	5.23	-3.10	-3.33	
	172.00	11.00	240	A1b	-7.72	-4.29	-4.46	
	230.00	-18.00	0	A2	-0.83	-9.32	9.48	
	230.00	10.00	120	A2a	7.84	-8.21	-5.45	
	230.00	11.00	240	A2b	-14.43	-13.96	-8.33	
	302.00	-21.00	0	A3	-0.63	-6.25	5.97	
	302.00	8.00	120	A3a	4.92	-5.76	-3.55	
	302.00	21.00	240	A3b	-7.73	-7.56	-4.46	
	1.2D + 1.0Di + 1.0Wi 90°	1.73	0.00	0	1	0.17	45.13	1.86
		1.73	0.00	120	1a	1.26	50.64	-0.71
1.73		0.00	240	1b	-1.85	40.73	-1.12	
172.00		-18.00	0	A1	-0.34	-4.58	7.21	
172.00		5.00	120	A1a	4.65	-2.66	-2.82	

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down		
					*Fx (kip)	*Fy (kip)	*Fz (kip)
1.2D + 1.0Di + 1.0Wi 120°	172.00	11.00	240	A1b	-7.68	-4.20	-4.30
	230.00	-18.00	0	A2	-1.02	-11.34	11.80
	230.00	10.00	120	A2a	6.47	-6.62	-4.18
	230.00	11.00	240	A2b	-13.96	-13.24	-7.61
	302.00	-21.00	0	A3	-0.77	-6.98	6.95
	302.00	8.00	120	A3a	4.52	-5.25	-2.97
	302.00	21.00	240	A3b	-7.67	-7.33	-4.09
	1.73	0.00	0	1	0.09	42.21	2.03
	1.73	0.00	120	1a	1.21	51.47	-0.69
	1.73	0.00	240	1b	-1.66	43.43	-1.11
	172.00	-18.00	0	A1	-0.27	-5.26	8.26
	172.00	5.00	120	A1a	4.50	-2.49	-2.59
	172.00	11.00	240	A1b	-7.30	-3.91	-3.90
	230.00	-18.00	0	A2	-0.83	-13.42	14.19
	230.00	10.00	120	A2a	6.04	-5.91	-3.48
230.00	11.00	240	A2b	-12.58	-11.66	-6.33	
302.00	-21.00	0	A3	-0.63	-7.75	7.97	
302.00	8.00	120	A3a	4.51	-5.07	-2.60	
302.00	21.00	240	A3b	-7.24	-6.82	-3.48	
1.2D + 1.0Di + 1.0Wi 180°	1.73	0.00	0	1	0.01	40.24	2.18
	1.73	0.00	120	1a	1.31	49.10	-0.87
	1.73	0.00	240	1b	-1.35	48.27	-0.92
	172.00	-18.00	0	A1	0.00	-5.76	8.98
	172.00	5.00	120	A1a	5.47	-3.07	-2.84
	172.00	11.00	240	A1b	-5.45	-2.86	-2.83
	230.00	-18.00	0	A2	0.00	-15.93	16.77
	230.00	10.00	120	A2a	8.56	-8.12	-4.00
	230.00	11.00	240	A2b	-8.52	-8.04	-3.99
	302.00	-21.00	0	A3	0.00	-8.59	8.93
	302.00	8.00	120	A3a	5.53	-5.75	-2.48
	302.00	21.00	240	A3b	-5.57	-5.54	-2.51
	1.73	0.00	0	1	-0.04	40.96	2.13
	1.73	0.00	120	1a	1.50	46.06	-1.05
	1.73	0.00	240	1b	-1.22	50.51	-0.76
172.00	-18.00	0	A1	0.13	-5.66	8.86	
172.00	5.00	120	A1a	6.40	-3.62	-3.30	
172.00	11.00	240	A1b	-4.75	-2.46	-2.61	
230.00	-18.00	0	A2	0.41	-15.15	16.01	
230.00	10.00	120	A2a	10.65	-9.91	-4.99	
230.00	11.00	240	A2b	-6.76	-6.47	-3.45	
302.00	-21.00	0	A3	0.31	-8.36	8.69	
302.00	8.00	120	A3a	6.44	-6.42	-2.84	
302.00	21.00	240	A3b	-4.89	-5.07	-2.47	
1.2D + 1.0Di + 1.0Wi 240°	1.73	0.00	0	1	-0.13	43.00	1.99
	1.73	0.00	120	1a	1.69	42.57	-1.10
	1.73	0.00	240	1b	-1.19	51.90	-0.69
	172.00	-18.00	0	A1	0.27	-5.28	8.30
	172.00	5.00	120	A1a	7.28	-4.18	-3.89
	172.00	11.00	240	A1b	-4.51	-2.32	-2.60
	230.00	-18.00	0	A2	0.83	-13.41	14.18
	230.00	10.00	120	A2a	12.61	-11.77	-6.35
	230.00	11.00	240	A2b	-6.00	-5.82	-3.46
	302.00	-21.00	0	A3	0.63	-7.77	7.99
	302.00	8.00	120	A3a	7.24	-7.12	-3.48
	302.00	21.00	240	A3b	-4.60	-4.93	-2.65
	1.73	0.00	0	1	-0.14	47.78	1.63
	1.73	0.00	120	1a	1.94	39.45	-1.11
	1.73	0.00	240	1b	-1.42	49.14	-0.74
172.00	-18.00	0	A1	0.27	-3.89	6.14	
172.00	5.00	120	A1a	7.73	-4.59	-4.46	
172.00	11.00	240	A1b	-5.24	-2.89	-3.33	
230.00	-18.00	0	A2	0.83	-9.33	9.48	
230.00	10.00	120	A2a	14.48	-14.09	-8.36	
230.00	11.00	240	A2b	-7.80	-8.12	-5.43	
302.00	-21.00	0	A3	0.64	-6.25	5.97	
302.00	8.00	120	A3a	7.72	-7.87	-4.46	
302.00	21.00	240	A3b	-4.97	-5.55	-3.57	
1.2D + 1.0Di + 1.0Wi 330°	1.73	0.00	0	1	-0.05	50.23	1.44
	1.73	0.00	120	1a	1.96	39.29	-1.09

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down		
					*Fx (kip)	*Fy (kip)	*Fz (kip)
1.2D + 1.0Ev + 1.0Eh Normal	1.73	0.00	240	1b	-1.67	46.18	-0.78
	172.00	-18.00	0	A1	0.13	-3.39	5.42
	172.00	5.00	120	A1a	7.54	-4.48	-4.48
	172.00	11.00	240	A1b	-6.09	-3.40	-3.91
	230.00	-18.00	0	A2	0.41	-7.53	7.63
	230.00	10.00	120	A2a	13.63	-13.37	-8.31
	230.00	11.00	240	A2b	-9.67	-9.87	-6.72
	302.00	-21.00	0	A3	0.32	-5.66	5.28
	302.00	8.00	120	A3a	7.35	-7.62	-4.58
	302.00	21.00	240	A3b	-5.70	-6.15	-4.15
	1.73	0.00	0	1	0.00	20.96	9.91
	1.73	0.00	120	1a	8.56	21.56	-4.95
	1.73	0.00	240	1b	-8.55	21.74	-4.94
	172.00	-18.00	0	A1	0.00	-3.33	4.79
	172.00	5.00	120	A1a	4.30	-2.79	-2.48
172.00	11.00	240	A1b	-4.32	-2.63	-2.50	
230.00	-18.00	0	A2	0.00	-6.32	6.01	
230.00	10.00	120	A2a	5.60	-6.03	-3.23	
230.00	11.00	240	A2b	-5.60	-6.00	-3.23	
302.00	-21.00	0	A3	0.00	-3.22	2.89	
302.00	8.00	120	A3a	2.63	-3.12	-1.52	
302.00	21.00	240	A3b	-2.66	-3.02	-1.54	
1.2D + 1.0Ev + 1.0Eh 60°	1.73	0.00	0	1	0.00	20.82	9.91
	1.73	0.00	120	1a	8.55	21.66	-4.95
	1.73	0.00	240	1b	-8.55	21.78	-4.94
	172.00	-18.00	0	A1	0.00	-3.37	4.84
	172.00	5.00	120	A1a	4.24	-2.74	-2.45
	172.00	11.00	240	A1b	-4.33	-2.63	-2.50
	230.00	-18.00	0	A2	0.00	-6.43	6.12
	230.00	10.00	120	A2a	5.37	-5.77	-3.10
	230.00	11.00	240	A2b	-5.72	-6.14	-3.30
	302.00	-21.00	0	A3	0.00	-3.26	2.92
	302.00	8.00	120	A3a	2.57	-3.04	-1.48
	302.00	21.00	240	A3b	-2.69	-3.06	-1.56
	1.73	0.00	0	1	0.00	20.76	9.92
	1.73	0.00	120	1a	8.55	21.68	-4.95
	1.73	0.00	240	1b	-8.55	21.80	-4.94
172.00	-18.00	0	A1	0.00	-3.40	4.88	
172.00	5.00	120	A1a	4.21	-2.72	-2.43	
172.00	11.00	240	A1b	-4.31	-2.62	-2.49	
230.00	-18.00	0	A2	0.00	-6.58	6.25	
230.00	10.00	120	A2a	5.26	-5.65	-3.04	
230.00	11.00	240	A2b	-5.69	-6.11	-3.29	
302.00	-21.00	0	A3	0.00	-3.31	2.96	
302.00	8.00	120	A3a	2.54	-3.00	-1.47	
302.00	21.00	240	A3b	-2.69	-3.05	-1.55	
1.2D + 1.0Ev + 1.0Eh 90°	1.73	0.00	0	1	0.00	20.72	9.92
	1.73	0.00	120	1a	8.55	21.69	-4.95
	1.73	0.00	240	1b	-8.55	21.83	-4.94
	172.00	-18.00	0	A1	0.00	-3.42	4.92
	172.00	5.00	120	A1a	4.20	-2.71	-2.42
	172.00	11.00	240	A1b	-4.29	-2.61	-2.48
	230.00	-18.00	0	A2	0.00	-6.75	6.41
	230.00	10.00	120	A2a	5.20	-5.58	-3.00
	230.00	11.00	240	A2b	-5.59	-6.00	-3.23
	302.00	-21.00	0	A3	0.00	-3.36	3.01
	302.00	8.00	120	A3a	2.52	-2.98	-1.46
	302.00	21.00	240	A3b	-2.66	-3.01	-1.53
	1.73	0.00	0	1	0.00	20.68	9.92
	1.73	0.00	120	1a	8.55	21.66	-4.95
	1.73	0.00	240	1b	-8.54	21.89	-4.94
172.00	-18.00	0	A1	0.00	-3.45	4.95	
172.00	5.00	120	A1a	4.22	-2.73	-2.44	
172.00	11.00	240	A1b	-4.23	-2.56	-2.44	
230.00	-18.00	0	A2	0.00	-6.94	6.58	
230.00	10.00	120	A2a	5.32	-5.72	-3.07	
230.00	11.00	240	A2b	-5.31	-5.68	-3.06	
302.00	-21.00	0	A3	0.00	-3.42	3.06	
302.00	8.00	120	A3a	2.56	-3.02	-1.48	
1.2D + 1.0Ev + 1.0Eh 180°	1.73	0.00	0	1	0.00	20.68	9.92
	1.73	0.00	120	1a	8.55	21.66	-4.95
	1.73	0.00	240	1b	-8.54	21.89	-4.94
	172.00	-18.00	0	A1	0.00	-3.45	4.95
	172.00	5.00	120	A1a	4.22	-2.73	-2.44
	172.00	11.00	240	A1b	-4.23	-2.56	-2.44
	230.00	-18.00	0	A2	0.00	-6.94	6.58
	230.00	10.00	120	A2a	5.32	-5.72	-3.07
	230.00	11.00	240	A2b	-5.31	-5.68	-3.06
	302.00	-21.00	0	A3	0.00	-3.42	3.06
	302.00	8.00	120	A3a	2.56	-3.02	-1.48

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down			
					*Fx (kip)	*Fy (kip)	*Fz (kip)	
1.2D + 1.0Ev + 1.0Eh 210°	302.00	21.00	240	A3b	-2.57	-2.91	-1.48	
	1.73	0.00	0	1	0.00	20.69	9.92	
	1.73	0.00	120	1a	8.55	21.64	-4.95	
	1.73	0.00	240	1b	-8.54	21.92	-4.94	
	172.00	-18.00	0	A1	0.00	-3.45	4.94	
	172.00	5.00	120	A1a	4.25	-2.75	-2.45	
	172.00	11.00	240	A1b	-4.21	-2.55	-2.43	
	230.00	-18.00	0	A2	0.00	-6.89	6.53	
	230.00	10.00	120	A2a	5.46	-5.87	-3.15	
	230.00	11.00	240	A2b	-5.21	-5.56	-3.01	
	302.00	-21.00	0	A3	0.00	-3.40	3.04	
	302.00	8.00	120	A3a	2.60	-3.07	-1.50	
	302.00	21.00	240	A3b	-2.54	-2.87	-1.47	
	1.2D + 1.0Ev + 1.0Eh 240°	1.73	0.00	0	1	0.00	20.72	9.92
1.73		0.00	120	1a	8.55	21.61	-4.95	
1.73		0.00	240	1b	-8.54	21.92	-4.94	
172.00		-18.00	0	A1	0.00	-3.42	4.91	
172.00		5.00	120	A1a	4.28	-2.77	-2.47	
172.00		11.00	240	A1b	-4.21	-2.55	-2.43	
230.00		-18.00	0	A2	0.00	-6.75	6.41	
230.00		10.00	120	A2a	5.60	-6.03	-3.23	
230.00		11.00	240	A2b	-5.19	-5.55	-3.00	
302.00		-21.00	0	A3	0.00	-3.36	3.00	
302.00		8.00	120	A3a	2.64	-3.12	-1.52	
302.00		21.00	240	A3b	-2.53	-2.87	-1.46	
1.2D + 1.0Ev + 1.0Eh 300°		1.73	0.00	0	1	0.00	20.80	9.91
		1.73	0.00	120	1a	8.56	21.57	-4.95
	1.73	0.00	240	1b	-8.54	21.89	-4.94	
	172.00	-18.00	0	A1	0.00	-3.37	4.85	
	172.00	5.00	120	A1a	4.31	-2.80	-2.49	
	172.00	11.00	240	A1b	-4.24	-2.57	-2.45	
	230.00	-18.00	0	A2	0.00	-6.44	6.12	
	230.00	10.00	120	A2a	5.74	-6.19	-3.31	
	230.00	11.00	240	A2b	-5.35	-5.72	-3.09	
	302.00	-21.00	0	A3	0.00	-3.26	2.92	
	302.00	8.00	120	A3a	2.68	-3.17	-1.55	
	302.00	21.00	240	A3b	-2.58	-2.92	-1.49	
	1.2D + 1.0Ev + 1.0Eh 330°	1.73	0.00	0	1	0.00	20.91	9.91
		1.73	0.00	120	1a	8.56	21.55	-4.95
1.73		0.00	240	1b	-8.55	21.80	-4.94	
172.00		-18.00	0	A1	0.00	-3.34	4.81	
172.00		5.00	120	A1a	4.31	-2.80	-2.49	
172.00		11.00	240	A1b	-4.29	-2.61	-2.48	
230.00		-18.00	0	A2	0.00	-6.34	6.03	
230.00		10.00	120	A2a	5.67	-6.11	-3.28	
230.00		11.00	240	A2b	-5.50	-5.89	-3.18	
302.00		-21.00	0	A3	0.00	-3.23	2.89	
302.00		8.00	120	A3a	2.66	-3.14	-1.53	
302.00		21.00	240	A3b	-2.63	-2.98	-1.52	
0.9D - 1.0Ev + 1.0Eh Normal		1.73	0.00	0	1	0.00	18.61	10.08
		1.73	0.00	120	1a	8.70	19.21	-5.03
	1.73	0.00	240	1b	-8.70	19.38	-5.03	
	172.00	-18.00	0	A1	0.00	-3.36	4.83	
	172.00	5.00	120	A1a	4.34	-2.82	-2.51	
	172.00	11.00	240	A1b	-4.37	-2.66	-2.52	
	230.00	-18.00	0	A2	0.00	-6.43	6.11	
	230.00	10.00	120	A2a	5.69	-6.13	-3.28	
	230.00	11.00	240	A2b	-5.69	-6.11	-3.29	
	302.00	-21.00	0	A3	0.00	-3.27	2.92	
	302.00	8.00	120	A3a	2.67	-3.16	-1.54	
	302.00	21.00	240	A3b	-2.70	-3.06	-1.56	
	0.9D - 1.0Ev + 1.0Eh 60°	1.73	0.00	0	1	0.00	18.47	10.08
		1.73	0.00	120	1a	8.70	19.30	-5.03
1.73		0.00	240	1b	-8.69	19.43	-5.03	
172.00		-18.00	0	A1	0.00	-3.41	4.89	
172.00		5.00	120	A1a	4.28	-2.77	-2.47	
172.00		11.00	240	A1b	-4.37	-2.66	-2.52	
230.00		-18.00	0	A2	0.00	-6.55	6.22	
230.00		10.00	120	A2a	5.46	-5.88	-3.15	

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down			
					*Fx (kip)	*Fy (kip)	*Fz (kip)	
0.9D - 1.0Ev + 1.0Eh 90°	230.00	11.00	240	A2b	-5.81	-6.24	-3.36	
	302.00	-21.00	0	A3	0.00	-3.30	2.96	
	302.00	8.00	120	A3a	2.61	-3.08	-1.50	
	302.00	21.00	240	A3b	-2.73	-3.10	-1.58	
	1.73	0.00	0	1	0.00	18.41	10.08	
	1.73	0.00	120	1a	8.70	19.33	-5.03	
	1.73	0.00	240	1b	-8.69	19.45	-5.03	
	172.00	-18.00	0	A1	0.00	-3.43	4.93	
	172.00	5.00	120	A1a	4.25	-2.75	-2.46	
	172.00	11.00	240	A1b	-4.36	-2.65	-2.51	
	230.00	-18.00	0	A2	0.00	-6.70	6.36	
	230.00	10.00	120	A2a	5.35	-5.75	-3.09	
	230.00	11.00	240	A2b	-5.78	-6.21	-3.34	
	0.9D - 1.0Ev + 1.0Eh 120°	302.00	-21.00	0	A3	0.00	-3.35	3.00
302.00		8.00	120	A3a	2.57	-3.04	-1.49	
302.00		21.00	240	A3b	-2.72	-3.09	-1.57	
1.73		0.00	0	1	0.00	18.37	10.09	
1.73		0.00	120	1a	8.70	19.34	-5.03	
1.73		0.00	240	1b	-8.69	19.48	-5.03	
172.00		-18.00	0	A1	0.00	-3.46	4.96	
172.00		5.00	120	A1a	4.24	-2.74	-2.45	
172.00		11.00	240	A1b	-4.33	-2.64	-2.50	
230.00		-18.00	0	A2	0.00	-6.87	6.51	
230.00		10.00	120	A2a	5.29	-5.69	-3.05	
230.00		11.00	240	A2b	-5.69	-6.10	-3.28	
302.00		-21.00	0	A3	0.00	-3.41	3.05	
0.9D - 1.0Ev + 1.0Eh 180°		302.00	8.00	120	A3a	2.56	-3.02	-1.48
	302.00	21.00	240	A3b	-2.69	-3.05	-1.55	
	1.73	0.00	0	1	0.00	18.33	10.09	
	1.73	0.00	120	1a	8.70	19.31	-5.03	
	1.73	0.00	240	1b	-8.69	19.54	-5.03	
	172.00	-18.00	0	A1	0.00	-3.49	5.00	
	172.00	5.00	120	A1a	4.26	-2.76	-2.46	
	172.00	11.00	240	A1b	-4.27	-2.59	-2.47	
	230.00	-18.00	0	A2	0.00	-7.05	6.68	
	230.00	10.00	120	A2a	5.41	-5.82	-3.12	
	230.00	11.00	240	A2b	-5.40	-5.78	-3.12	
	302.00	-21.00	0	A3	0.00	-3.47	3.10	
	302.00	8.00	120	A3a	2.59	-3.06	-1.50	
	0.9D - 1.0Ev + 1.0Eh 210°	302.00	21.00	240	A3b	-2.60	-2.95	-1.50
1.73		0.00	0	1	0.00	18.34	10.09	
1.73		0.00	120	1a	8.70	19.28	-5.03	
1.73		0.00	240	1b	-8.69	19.56	-5.02	
172.00		-18.00	0	A1	0.00	-3.48	4.99	
172.00		5.00	120	A1a	4.29	-2.78	-2.48	
172.00		11.00	240	A1b	-4.25	-2.58	-2.45	
230.00		-18.00	0	A2	0.00	-7.01	6.64	
230.00		10.00	120	A2a	5.55	-5.98	-3.20	
230.00		11.00	240	A2b	-5.30	-5.67	-3.06	
302.00		-21.00	0	A3	0.00	-3.45	3.08	
302.00		8.00	120	A3a	2.63	-3.11	-1.52	
302.00		21.00	240	A3b	-2.57	-2.91	-1.49	
0.9D - 1.0Ev + 1.0Eh 240°		1.73	0.00	0	1	0.00	18.37	10.09
	1.73	0.00	120	1a	8.70	19.25	-5.03	
	1.73	0.00	240	1b	-8.69	19.56	-5.02	
	172.00	-18.00	0	A1	0.00	-3.46	4.96	
	172.00	5.00	120	A1a	4.32	-2.80	-2.49	
	172.00	11.00	240	A1b	-4.25	-2.58	-2.45	
	230.00	-18.00	0	A2	0.00	-6.87	6.51	
	230.00	10.00	120	A2a	5.69	-6.14	-3.29	
	230.00	11.00	240	A2b	-5.28	-5.65	-3.05	
	302.00	-21.00	0	A3	0.00	-3.41	3.04	
	302.00	8.00	120	A3a	2.67	-3.16	-1.54	
	302.00	21.00	240	A3b	-2.57	-2.91	-1.48	
	0.9D - 1.0Ev + 1.0Eh 300°	1.73	0.00	0	1	0.00	18.47	10.08
		1.73	0.00	120	1a	8.70	19.21	-5.03
1.73		0.00	240	1b	-8.69	19.52	-5.02	
172.00		-18.00	0	A1	0.00	-3.41	4.89	
172.00		5.00	120	A1a	4.35	-2.83	-2.51	



## DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down			
					*Fx (kip)	*Fy (kip)	*Fz (kip)	
0.9D - 1.0Ev + 1.0Eh 330°	172.00	11.00	240	A1b	-4.29	-2.61	-2.48	
	230.00	-18.00	0	A2	0.00	-6.55	6.22	
	230.00	10.00	120	A2a	5.82	-6.28	-3.36	
	230.00	11.00	240	A2b	-5.45	-5.84	-3.15	
	302.00	-21.00	0	A3	0.00	-3.30	2.96	
	302.00	8.00	120	A3a	2.71	-3.21	-1.56	
	302.00	21.00	240	A3b	-2.62	-2.97	-1.51	
	1.73	0.00	0	1	0.00	18.56	10.08	
	1.73	0.00	120	1a	8.70	19.20	-5.03	
	1.73	0.00	240	1b	-8.69	19.45	-5.03	
	172.00	-18.00	0	A1	0.00	-3.38	4.85	
	172.00	5.00	120	A1a	4.35	-2.83	-2.51	
	172.00	11.00	240	A1b	-4.33	-2.64	-2.50	
	230.00	-18.00	0	A2	0.00	-6.46	6.13	
	230.00	10.00	120	A2a	5.77	-6.22	-3.33	
	230.00	11.00	240	A2b	-5.59	-6.00	-3.23	
	302.00	-21.00	0	A3	0.00	-3.27	2.93	
	302.00	8.00	120	A3a	2.69	-3.19	-1.55	
	302.00	21.00	240	A3b	-2.67	-3.02	-1.54	
	1.0D + 1.0W Service Normal	1.73	0.00	0	1	0.00	23.77	9.70
		1.73	0.00	120	1a	8.73	18.83	-5.05
		1.73	0.00	240	1b	-8.72	19.10	-5.05
172.00		-18.00	0	A1	0.00	-2.67	3.87	
172.00		5.00	120	A1a	4.85	-3.18	-2.87	
172.00		11.00	240	A1b	-4.86	-2.99	-2.87	
230.00		-18.00	0	A2	0.00	-4.29	3.95	
230.00		10.00	120	A2a	6.93	-7.53	-4.22	
230.00		11.00	240	A2b	-6.91	-7.47	-4.21	
302.00		-21.00	0	A3	0.00	-3.02	2.58	
302.00		8.00	120	A3a	3.15	-3.76	-1.99	
302.00		21.00	240	A3b	-3.17	-3.63	-1.99	
1.0D + 1.0W Service 60°		1.73	0.00	0	1	-0.01	21.89	9.84
		1.73	0.00	120	1a	8.48	22.71	-4.91
		1.73	0.00	240	1b	-8.82	17.49	-5.10
		172.00	-18.00	0	A1	-0.06	-3.09	4.44
		172.00	5.00	120	A1a	3.83	-2.50	-2.28
		172.00	11.00	240	A1b	-5.33	-3.28	-3.07
		230.00	-18.00	0	A2	-0.20	-5.83	5.42
		230.00	10.00	120	A2a	4.61	-5.17	-2.88
		230.00	11.00	240	A2b	-8.21	-8.76	-4.74
		302.00	-21.00	0	A3	-0.15	-3.42	2.97
	302.00	8.00	120	A3a	2.53	-3.16	-1.62	
	302.00	21.00	240	A3b	-3.54	-3.94	-2.04	
	1.0D + 1.0W Service 90°	1.73	0.00	0	1	-0.01	19.98	9.97
		1.73	0.00	120	1a	8.40	24.02	-4.86
		1.73	0.00	240	1b	-8.80	17.93	-5.08
		172.00	-18.00	0	A1	-0.08	-3.47	4.98
		172.00	5.00	120	A1a	3.45	-2.22	-2.02
		172.00	11.00	240	A1b	-5.19	-3.18	-2.97
		230.00	-18.00	0	A2	-0.24	-7.07	6.68
		230.00	10.00	120	A2a	3.70	-4.14	-2.24
		230.00	11.00	240	A2b	-7.84	-8.30	-4.42
		302.00	-21.00	0	A3	-0.18	-3.75	3.34
302.00		8.00	120	A3a	2.32	-2.90	-1.42	
302.00		21.00	240	A3b	-3.48	-3.83	-1.93	
1.0D + 1.0W Service 120°		1.73	0.00	0	1	-0.01	17.95	10.12
		1.73	0.00	120	1a	8.36	24.62	-4.84
		1.73	0.00	240	1b	-8.72	19.23	-5.03
		172.00	-18.00	0	A1	-0.06	-3.86	5.53
		172.00	5.00	120	A1a	3.29	-2.09	-1.90
		172.00	11.00	240	A1b	-4.84	-2.93	-2.72
		230.00	-18.00	0	A2	-0.20	-8.29	7.92
		230.00	10.00	120	A2a	3.32	-3.66	-1.91
		230.00	11.00	240	A2b	-6.96	-7.32	-3.80
		302.00	-21.00	0	A3	-0.15	-4.06	3.69
	302.00	8.00	120	A3a	2.26	-2.79	-1.30	
	302.00	21.00	240	A3b	-3.30	-3.62	-1.74	
	1.0D + 1.0W Service 180°	1.73	0.00	0	1	0.00	16.25	10.24
		1.73	0.00	120	1a	8.48	22.87	-4.90

DETAILED REACTIONS

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	*(-) Uplift and (+) Down		
					*Fx (kip)	*Fy (kip)	*Fz (kip)
1.0D + 1.0W Service 210°	1.73	0.00	240	1b	-8.47	23.07	-4.90
	172.00	-18.00	0	A1	0.00	-4.23	6.03
	172.00	5.00	120	A1a	3.79	-2.42	-2.12
	172.00	11.00	240	A1b	-3.80	-2.28	-2.13
	230.00	-18.00	0	A2	0.00	-9.77	9.34
	230.00	10.00	120	A2a	4.65	-5.00	-2.46
	230.00	11.00	240	A2b	-4.63	-4.95	-2.45
	302.00	-21.00	0	A3	0.00	-4.41	4.03
	302.00	8.00	120	A3a	2.64	-3.12	-1.36
	302.00	21.00	240	A3b	-2.66	-3.02	-1.37
	1.73	0.00	0	1	0.00	16.68	10.21
	1.73	0.00	120	1a	8.60	21.02	-4.97
	1.73	0.00	240	1b	-8.39	24.31	-4.85
	172.00	-18.00	0	A1	0.03	-4.13	5.90
	172.00	5.00	120	A1a	4.30	-2.76	-2.39
172.00	11.00	240	A1b	-3.42	-2.04	-1.94	
1.0D + 1.0W Service 240°	230.00	-18.00	0	A2	0.10	-9.35	8.94
	230.00	10.00	120	A2a	5.81	-6.16	-3.08
	230.00	11.00	240	A2b	-3.66	-3.97	-2.00
	302.00	-21.00	0	A3	0.07	-4.31	3.94
	302.00	8.00	120	A3a	2.98	-3.43	-1.52
	302.00	21.00	240	A3b	-2.39	-2.78	-1.30
	1.73	0.00	0	1	0.01	18.00	10.11
	1.73	0.00	120	1a	8.72	19.02	-5.04
	1.73	0.00	240	1b	-8.36	24.84	-4.83
	172.00	-18.00	0	A1	0.06	-3.85	5.51
	172.00	5.00	120	A1a	4.81	-3.11	-2.71
	172.00	11.00	240	A1b	-3.28	-1.95	-1.90
	230.00	-18.00	0	A2	0.20	-8.28	7.91
	230.00	10.00	120	A2a	6.98	-7.38	-3.81
	230.00	11.00	240	A2b	-3.29	-3.61	-1.90
1.0D + 1.0W Service 300°	302.00	-21.00	0	A3	0.15	-4.06	3.68
	302.00	8.00	120	A3a	3.28	-3.74	-1.73
	302.00	21.00	240	A3b	-2.28	-2.69	-1.32
	1.73	0.00	0	1	0.00	21.94	9.83
	1.73	0.00	120	1a	8.83	17.24	-5.11
	1.73	0.00	240	1b	-8.47	22.96	-4.90
	172.00	-18.00	0	A1	0.06	-3.08	4.42
	172.00	5.00	120	A1a	5.30	-3.47	-3.06
	172.00	11.00	240	A1b	-3.82	-2.34	-2.28
	230.00	-18.00	0	A2	0.20	-5.82	5.42
	230.00	10.00	120	A2a	8.23	-8.83	-4.75
	230.00	11.00	240	A2b	-4.58	-5.11	-2.87
	302.00	-21.00	0	A3	0.15	-3.41	2.97
	302.00	8.00	120	A3a	3.51	-4.07	-2.03
	302.00	21.00	240	A3b	-2.54	-3.04	-1.63
1.0D + 1.0W Service 330°	1.73	0.00	0	1	0.00	23.22	9.74
	1.73	0.00	120	1a	8.80	17.59	-5.09
	1.73	0.00	240	1b	-8.59	21.09	-4.98
	172.00	-18.00	0	A1	0.03	-2.80	4.03
	172.00	5.00	120	A1a	5.19	-3.40	-3.03
	172.00	11.00	240	A1b	-4.33	-2.66	-2.59
	230.00	-18.00	0	A2	0.10	-4.77	4.40
	230.00	10.00	120	A2a	7.85	-8.46	-4.64
	230.00	11.00	240	A2b	-5.73	-6.30	-3.58
	302.00	-21.00	0	A3	0.07	-3.14	2.69
	302.00	8.00	120	A3a	3.40	-3.98	-2.04
	302.00	21.00	240	A3b	-2.85	-3.35	-1.84

## GUY ANCHOR DESIGN LOADS

Radius (ft)	Drop (ft)	Azimuth (deg)	Uplift (kip)	Shear (kip)
172.00	-18.00	0	6.68	9.28
172.00	5.00	120	5.51	9.39
172.00	11.00	240	5.23	9.44
230.00	-18.00	0	22.31	21.34
230.00	10.00	120	20.14	21.62
230.00	11.00	240	19.96	21.53
302.00	-21.00	0	8.68	8.93
302.00	8.00	120	8.05	8.92
302.00	21.00	240	7.80	8.93

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%
1.2D + 1.0W Normal	67.12	3/8 EHS	A1	27	9.24	0.24	3
		3/8 EHS	A1a	27a	9.24	2.4	26
		3/8 EHS	A1b	27b	9.24	2.44	26
	126.87	3/8 EHS	A1a	T2	9.24	3.12	34
			A1	T2	9.24	0.29	3
			A1a	T2a	9.24	3.28	35
		7/16 EHS	A1b	T2a	9.24	3.2	35
			A1b	T2b	9.24	3.07	33
			A1	T2b	9.24	0.29	3
	198.97	7/16 EHS	A2	T3	12.48	0.46	4
			A2a	T3	12.48	6.22	50
			A2b	T3a	12.48	6.39	51
		7/16 EHS	A2a	T3a	12.48	6.44	52
			A2b	T3b	12.48	6.23	50
			A2	T3b	12.48	0.46	4
	271.07	7/16 EHS	A2	T4	12.48	1.08	9
			A2a	T4	12.48	6.04	48
			A2a	T4a	12.48	5.35	43
		7/16 EHS	A2b	T4a	12.48	5.36	43
			A2	T4b	12.48	1.08	9
			A2b	T4b	12.48	5.96	48
	331.07	7/16 EHS	A3	T5	12.48	1.84	15
			A3a	T5	12.48	5	40
			A3b	T5a	12.48	4.52	36
		7/16 EHS	A3a	T5a	12.48	4.58	37
			A3	T5b	12.48	1.85	15
			A3b	T5b	12.48	4.9	39
1.2D + 1.0W 60°	67.12	3/8 EHS	A1	27	9.24	1.28	14
		3/8 EHS	A1a	27a	9.24	1.2	13
		3/8 EHS	A1b	27b	9.24	3.18	34
	126.87	3/8 EHS	A1a	T2	9.24	1.27	14
			A1	T2	9.24	1.36	15
			A1b	T2a	9.24	3.88	42
		7/16 EHS	A1a	T2a	9.24	1.24	13
			A1b	T2b	9.24	3.89	42
			A1	T2b	9.24	1.31	14
	198.97	7/16 EHS	A2	T3	12.48	1.99	16
			A2a	T3	12.48	1.87	15
			A2a	T3a	12.48	1.85	15
		7/16 EHS	A2b	T3a	12.48	7.67	61
			A2	T3b	12.48	1.97	16
			A2b	T3b	12.48	7.67	61
	271.07	7/16 EHS	A2	T4	12.48	2.6	21
			A2a	T4	12.48	2.45	20
			A2b	T4a	12.48	7.24	58
		7/16 EHS	A2a	T4a	12.48	2.28	18
			A2b	T4b	12.48	7.22	58
			A2	T4b	12.48	2.44	20
	331.07	7/16 EHS	A3	T5	12.48	3.42	27
			A3a	T5	12.48	3.29	26
			A3a	T5a	12.48	3.11	25
		7/16 EHS	A3b	T5a	12.48	5.78	46
			A3b	T5b	12.48	5.77	46
			A3	T5b	12.48	3.26	26
1.2D + 1.0W 90°	67.12	3/8 EHS	A1	27	9.24	1.91	21
		3/8 EHS	A1a	27a	9.24	0.54	6
		3/8 EHS	A1b	27b	9.24	2.92	32
	126.87	3/8 EHS	A1a	T2	9.24	0.51	6
			A1	T2	9.24	2.37	26
			A1a	T2a	9.24	0.45	5
		7/16 EHS	A1b	T2a	9.24	3.59	39
			A1b	T2b	9.24	3.78	41
			A1	T2b	9.24	2.42	26
	198.97	7/16 EHS	A2	T3	12.48	4.22	34
			A2a	T3	12.48	0.73	6
			A2a	T3a	12.48	0.68	5

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0W 120°	271.07	7/16 EHS	A2b	T3a	12.48	7.27	58	
		7/16 EHS	A2	T3b	12.48	4.32	35	
		7/16 EHS	A2b	T3b	12.48	7.48	60	
		7/16 EHS	A2a	T4	12.48	1.29	10	
		7/16 EHS	A2	T4	12.48	4.32	35	
		7/16 EHS	A2b	T4a	12.48	6.96	56	
		7/16 EHS	A2a	T4a	12.48	1.24	10	
		7/16 EHS	A2	T4b	12.48	3.83	31	
		7/16 EHS	A2b	T4b	12.48	6.57	53	
	331.07	7/16 EHS	A3	T5	12.48	4.31	35	
		7/16 EHS	A3a	T5	12.48	2.22	18	
		7/16 EHS	A3b	T5a	12.48	5.49	44	
		7/16 EHS	A3a	T5a	12.48	2.18	17	
		7/16 EHS	A3	T5b	12.48	3.96	32	
		7/16 EHS	A3b	T5b	12.48	5.22	42	
		67.12	3/8 EHS	A1	T2	9.24	2.55	28
			3/8 EHS	A1a	T2a	9.24	0.29	3
			3/8 EHS	A1b	T2b	9.24	2.42	26
126.87	3/8 EHS		A1a	T2	9.24	0.16	2	
	3/8 EHS		A1	T2	9.24	3.29	36	
	3/8 EHS		A1b	T2a	9.24	3.01	33	
3/8 EHS	A1a		T2a	9.24	0.16	2		
3/8 EHS	A1b		T2b	9.24	3.14	34		
198.97	3/8 EHS		A1	T2b	9.24	3.48	38	
	7/16 EHS	A2	T3	12.48	6.48	52		
	7/16 EHS	A2a	T3	12.48	0.3	2		
	7/16 EHS	A2b	T3a	12.48	6.09	49		
	7/16 EHS	A2a	T3a	12.48	0.3	2		
	7/16 EHS	A2b	T3b	12.48	6.24	50		
	271.07	7/16 EHS	A2	T3b	12.48	6.7	54	
		7/16 EHS	A2a	T4	12.48	0.86	7	
		7/16 EHS	A2	T4	12.48	6.16	49	
7/16 EHS		A2a	T4a	12.48	0.86	7		
7/16 EHS		A2b	T4a	12.48	5.79	46		
7/16 EHS		A2	T4b	12.48	5.47	44		
7/16 EHS		A2b	T4b	12.48	5.15	41		
331.07		7/16 EHS	A3	T5	12.48	5.1	41	
		7/16 EHS	A3a	T5	12.48	1.61	13	
	7/16 EHS	A3b	T5a	12.48	4.77	38		
	7/16 EHS	A3a	T5a	12.48	1.62	13		
	7/16 EHS	A3	T5b	12.48	4.66	37		
	7/16 EHS	A3b	T5b	12.48	4.37	35		
	67.12	3/8 EHS	A1	T2	9.24	3.3	36	
		3/8 EHS	A1a	T2a	9.24	1.17	13	
		3/8 EHS	A1b	T2b	9.24	1.14	12	
126.87		3/8 EHS	A1a	T2	9.24	1.13	12	
		3/8 EHS	A1	T2	9.24	4.16	45	
		3/8 EHS	A1b	T2a	9.24	1.16	13	
3/8 EHS		A1a	T2a	9.24	1.18	13		
3/8 EHS		A1	T2b	9.24	4.15	45		
3/8 EHS		A1b	T2b	9.24	1.11	12		
198.97	7/16 EHS	A2a	T3	12.48	1.72	14		
	7/16 EHS	A2	T3	12.48	8.09	65		
	7/16 EHS	A2a	T3a	12.48	1.75	14		
	7/16 EHS	A2b	T3a	12.48	1.75	14		
	7/16 EHS	A2b	T3b	12.48	1.71	14		
	7/16 EHS	A2	T3b	12.48	8.12	65		
	271.07	7/16 EHS	A2	T4	12.48	7.58	61	
		7/16 EHS	A2a	T4	12.48	2.16	17	
		7/16 EHS	A2a	T4a	12.48	2.33	19	
7/16 EHS		A2b	T4a	12.48	2.31	19		
7/16 EHS		A2b	T4b	12.48	2.15	17		
7/16 EHS		A2	T4b	12.48	7.55	61		
331.07		7/16 EHS	A3a	T5	12.48	2.99	24	
		7/16 EHS	A3	T5	12.48	6.07	49	
		7/16 EHS	A3a	T5a	12.48	3.19	26	
	7/16 EHS	A3b	T5a	12.48	3.12	25		
	7/16 EHS	A3	T5b	12.48	6.05	49		

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%
1.2D + 1.0W 210°	67.12	7/16 EHS	A3b	T5b	12.48	2.95	24
		3/8 EHS	A1	27	9.24	3.09	33
		3/8 EHS	A1a	27a	9.24	1.78	19
	126.87	3/8 EHS	A1b	27b	9.24	0.5	5
			A1	T2	9.24	4.07	44
		3/8 EHS	A1a	T2	9.24	2.22	24
		3/8 EHS	A1b	T2a	9.24	0.46	5
		3/8 EHS	A1a	T2a	9.24	2.16	23
		3/8 EHS	A1b	T2b	9.24	0.4	4
		3/8 EHS	A1	T2b	9.24	3.9	42
	198.97	7/16 EHS	A2a	T3	12.48	4.02	32
			A2	T3	12.48	7.99	64
		7/16 EHS	A2b	T3a	12.48	0.7	6
		7/16 EHS	A2a	T3a	12.48	3.97	32
		7/16 EHS	A2b	T3b	12.48	0.65	5
		7/16 EHS	A2	T3b	12.48	7.77	62
		7/16 EHS	A2a	T4	12.48	3.51	28
	271.07	7/16 EHS	A2	T4	12.48	6.95	56
			A2b	T4a	12.48	1.25	10
		7/16 EHS	A2a	T4a	12.48	4.06	32
		7/16 EHS	A2b	T4b	12.48	1.19	10
		7/16 EHS	A2	T4b	12.48	7.32	59
		7/16 EHS	A3a	T5	12.48	3.69	30
		7/16 EHS	A3	T5	12.48	5.5	44
7/16 EHS		A3b	T5a	12.48	2.09	17	
7/16 EHS		A3a	T5a	12.48	4.07	33	
7/16 EHS		A3b	T5b	12.48	2.04	16	
1.2D + 1.0W 240°	67.12	3/8 EHS	A3	T5b	12.48	5.78	46
		3/8 EHS	A1	27	9.24	2.59	28
		3/8 EHS	A1a	27a	9.24	2.41	26
	126.87	3/8 EHS	A1b	27b	9.24	0.3	3
			A1a	T2	9.24	3.18	34
		3/8 EHS	A1	T2	9.24	3.44	37
		3/8 EHS	A1b	T2a	9.24	0.13	1
		3/8 EHS	A1a	T2a	9.24	3.02	33
		3/8 EHS	A1b	T2b	9.24	0.13	1
		3/8 EHS	A1	T2b	9.24	3.27	35
	198.97	7/16 EHS	A2	T3	12.48	6.69	54
			A2a	T3	12.48	6.28	50
		7/16 EHS	A2a	T3a	12.48	6.09	49
		7/16 EHS	A2b	T3a	12.48	0.3	2
		7/16 EHS	A2b	T3b	12.48	0.3	2
		7/16 EHS	A2	T3b	12.48	6.48	52
		7/16 EHS	A2	T4	12.48	5.47	44
	271.07	7/16 EHS	A2a	T4	12.48	5.13	41
			A2b	T4a	12.48	0.86	7
		7/16 EHS	A2a	T4a	12.48	5.84	47
		7/16 EHS	A2b	T4b	12.48	0.85	7
		7/16 EHS	A2	T4b	12.48	6.12	49
		7/16 EHS	A3	T5	12.48	4.61	37
		7/16 EHS	A3a	T5	12.48	4.38	35
7/16 EHS		A3b	T5a	12.48	1.53	12	
7/16 EHS		A3a	T5a	12.48	4.81	39	
7/16 EHS		A3	T5b	12.48	5.03	40	
1.2D + 1.0W 300°	67.12	3/8 EHS	A3b	T5b	12.48	1.52	12
		3/8 EHS	A1	27	9.24	1.26	14
		3/8 EHS	A1a	27a	9.24	3.23	35
	126.87	3/8 EHS	A1b	27b	9.24	1.19	13
			A1	T2	9.24	1.3	14
		3/8 EHS	A1a	T2	9.24	3.88	42
		3/8 EHS	A1b	T2a	9.24	1.2	13
		3/8 EHS	A1a	T2a	9.24	3.94	43
		3/8 EHS	A1	T2b	9.24	1.33	14
		3/8 EHS	A1b	T2b	9.24	1.26	14
	198.97	7/16 EHS	A2	T3	12.48	1.97	16
			A2a	T3	12.48	7.71	62
		7/16 EHS	A2a	T3a	12.48	7.69	62
		7/16 EHS	A2b	T3a	12.48	1.83	15

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0W 330°	271.07	7/16 EHS	A2	T3b	12.48	1.99	16	
		7/16 EHS	A2b	T3b	12.48	1.86	15	
		7/16 EHS	A2a	T4	12.48	7.3	59	
		7/16 EHS	A2	T4	12.48	2.43	19	
		7/16 EHS	A2a	T4a	12.48	7.29	58	
		7/16 EHS	A2b	T4a	12.48	2.26	18	
		7/16 EHS	A2	T4b	12.48	2.59	21	
		7/16 EHS	A2b	T4b	12.48	2.42	19	
		7/16 EHS	A3a	T5	12.48	5.85	47	
	331.07	7/16 EHS	A3	T5	12.48	3.22	26	
		7/16 EHS	A3a	T5a	12.48	5.84	47	
		7/16 EHS	A3b	T5a	12.48	3.04	24	
		7/16 EHS	A3b	T5b	12.48	3.2	26	
		7/16 EHS	A3	T5b	12.48	3.39	27	
		67.12	3/8 EHS	A1	27	9.24	0.59	6
			3/8 EHS	A1a	27a	9.24	3	33
			3/8 EHS	A1b	27b	9.24	1.81	20
			126.87	3/8 EHS	A1a	T2	9.24	3.7
	3/8 EHS			A1	T2	9.24	0.56	6
	3/8 EHS			A1a	T2a	9.24	3.86	42
	3/8 EHS			A1b	T2a	9.24	2.27	25
	3/8 EHS			A1	T2b	9.24	0.62	7
	3/8 EHS			A1b	T2b	9.24	2.24	24
	198.97	7/16 EHS	A2	T3	12.48	0.83	7	
		7/16 EHS	A2a	T3	12.48	7.42	59	
		7/16 EHS	A2b	T3a	12.48	4.14	33	
		7/16 EHS	A2a	T3a	12.48	7.63	61	
7/16 EHS		A2b	T3b	12.48	4.08	33		
7/16 EHS		A2	T3b	12.48	0.87	7		
271.07		7/16 EHS	A2	T4	12.48	1.44	12	
		7/16 EHS	A2a	T4	12.48	7.14	57	
		7/16 EHS	A2b	T4a	12.48	3.69	30	
	7/16 EHS	A2a	T4a	12.48	6.73	54		
	7/16 EHS	A2b	T4b	12.48	4.16	33		
	7/16 EHS	A2	T4b	12.48	1.49	12		
	331.07	7/16 EHS	A3a	T5	12.48	5.66	45	
		7/16 EHS	A3	T5	12.48	2.34	19	
		7/16 EHS	A3b	T5a	12.48	3.8	30	
7/16 EHS		A3a	T5a	12.48	5.38	43		
7/16 EHS		A3	T5b	12.48	2.39	19		
7/16 EHS		A3b	T5b	12.48	4.12	33		
67.12		3/8 EHS	A1	27	9.24	2.45	26	
		3/8 EHS	A1a	27a	9.24	3.24	35	
		3/8 EHS	A1b	27b	9.24	3.18	34	
	126.87	3/8 EHS	A1a	T2	9.24	3.39	37	
		3/8 EHS	A1	T2	9.24	2.21	24	
		3/8 EHS	A1b	T2a	9.24	3.29	36	
		3/8 EHS	A1a	T2a	9.24	3.36	36	
		3/8 EHS	A1b	T2b	9.24	3.33	36	
		3/8 EHS	A1	T2b	9.24	2.22	24	
198.97	7/16 EHS	A2a	T3	12.48	5.1	41		
	7/16 EHS	A2	T3	12.48	3.04	24		
	7/16 EHS	A2a	T3a	12.48	5.06	41		
	7/16 EHS	A2b	T3a	12.48	5.04	40		
	7/16 EHS	A2	T3b	12.48	3.04	24		
	7/16 EHS	A2b	T3b	12.48	5.08	41		
	271.07	7/16 EHS	A2a	T4	12.48	5.37	43	
		7/16 EHS	A2	T4	12.48	3.08	25	
		7/16 EHS	A2b	T4a	12.48	5.19	42	
7/16 EHS		A2a	T4a	12.48	5.22	42		
7/16 EHS		A2	T4b	12.48	3.08	25		
7/16 EHS		A2b	T4b	12.48	5.33	43		
331.07		7/16 EHS	A3	T5	12.48	4.67	37	
		7/16 EHS	A3a	T5	12.48	6.26	50	
		7/16 EHS	A3a	T5a	12.48	6.15	49	
	7/16 EHS	A3b	T5a	12.48	6.03	48		
	7/16 EHS	A3	T5b	12.48	4.68	37		
	7/16 EHS	A3b	T5b	12.48	6.14	49		

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0Di + 1.0Wi 60°	67.12	3/8 EHS	A1	27	9.24	2.72	29	
		3/8 EHS	A1a	27a	9.24	2.63	28	
		3/8 EHS	A1b	27b	9.24	3.35	36	
	126.87	3/8 EHS	A1a	T2	9.24	2.51	27	
			A1	T2	9.24	2.74	30	
			A1a	T2a	9.24	2.5	27	
		3/8 EHS	A1b	T2a	9.24	3.6	39	
			A1	T2b	9.24	2.66	29	
			A1b	T2b	9.24	3.64	39	
	198.97	7/16 EHS	A2a	T3	12.48	3.63	29	
			A2	T3	12.48	3.86	31	
			A2a	T3a	12.48	3.55	28	
		7/16 EHS	A2b	T3a	12.48	5.92	47	
			A2	T3b	12.48	3.81	31	
			A2b	T3b	12.48	5.88	47	
	271.07	7/16 EHS	A2a	T4	12.48	3.98	32	
			A2	T4	12.48	4.24	34	
			A2a	T4a	12.48	3.8	30	
		7/16 EHS	A2b	T4a	12.48	6.16	49	
			A2b	T4b	12.48	6.15	49	
			A2	T4b	12.48	4.06	33	
		331.07	7/16 EHS	A3	T5	12.48	5.38	43
				A3a	T5	12.48	5.14	41
				A3a	T5a	12.48	4.97	40
	7/16 EHS		A3b	T5a	12.48	6.69	54	
			A3b	T5b	12.48	6.69	54	
			A3	T5b	12.48	5.19	42	
	1.2D + 1.0Di + 1.0Wi 90°	67.12	3/8 EHS	A1	27	9.24	3.06	33
			3/8 EHS	A1a	27a	9.24	2.4	26
			3/8 EHS	A1b	27b	9.24	3.34	36
		126.87	3/8 EHS	A1	T2	9.24	3.2	35
				A1a	T2	9.24	2.18	24
				A1a	T2a	9.24	2.18	24
3/8 EHS			A1b	T2a	9.24	3.57	39	
			A1b	T2b	9.24	3.53	38	
			A1	T2b	9.24	3.13	34	
198.97		7/16 EHS	A2a	T3	12.48	3.02	24	
			A2	T3	12.48	4.69	38	
			A2a	T3a	12.48	3.03	24	
		7/16 EHS	A2b	T3a	12.48	5.64	45	
			A2b	T3b	12.48	5.65	45	
			A2	T3b	12.48	4.59	37	
271.07		7/16 EHS	A2	T4	12.48	4.99	40	
			A2a	T4	12.48	3.27	26	
			A2b	T4a	12.48	5.91	47	
		7/16 EHS	A2a	T4a	12.48	3.2	26	
			A2b	T4b	12.48	5.87	47	
			A2	T4b	12.48	4.77	38	
		331.07	7/16 EHS	A3	T5	12.48	5.99	48
				A3a	T5	12.48	4.68	37
				A3b	T5a	12.48	6.54	52
7/16 EHS			A3a	T5a	12.48	4.62	37	
			A3	T5b	12.48	5.8	46	
			A3b	T5b	12.48	6.51	52	
1.2D + 1.0Di + 1.0Wi 120°		67.12	3/8 EHS	A1	27	9.24	3.37	37
			3/8 EHS	A1a	27a	9.24	2.34	25
			3/8 EHS	A1b	27b	9.24	3.22	35
		126.87	3/8 EHS	A1a	T2	9.24	2.06	22
				A1	T2	9.24	3.65	39
				A1a	T2a	9.24	2.05	22
	3/8 EHS		A1b	T2a	9.24	3.36	36	
			A1b	T2b	9.24	3.27	35	
			A1	T2b	9.24	3.63	39	
	198.97	7/16 EHS	A2	T3	12.48	5.5	44	
			A2a	T3	12.48	2.83	23	
			A2b	T3a	12.48	5.07	41	
		7/16 EHS	A2a	T3a	12.48	2.87	23	
			A2b	T3b	12.48	5.06	41	



DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%		
1.2D + 1.0Di + 1.0Wi 180°	271.07	7/16 EHS	A2	T3b	12.48	5.4	43		
		7/16 EHS	A2	T4	12.48	5.73	46		
		7/16 EHS	A2a	T4	12.48	2.9	23		
		7/16 EHS	A2b	T4a	12.48	5.34	43		
		7/16 EHS	A2a	T4a	12.48	2.9	23		
		7/16 EHS	A2b	T4b	12.48	5.18	42		
	331.07	7/16 EHS	A2	T4b	12.48	5.57	45		
		7/16 EHS	A3	T5	12.48	6.58	53		
		7/16 EHS	A3a	T5	12.48	4.5	36		
		7/16 EHS	A3b	T5a	12.48	6.17	49		
		7/16 EHS	A3a	T5a	12.48	4.52	36		
		7/16 EHS	A3b	T5b	12.48	6.05	48		
	67.12	3/8 EHS	7/16 EHS	A3	T5b	12.48	6.46	52	
			3/8 EHS	A1	27	9.24	3.57	39	
			3/8 EHS	A1a	27a	9.24	2.64	29	
		126.87	3/8 EHS	3/8 EHS	A1b	27b	9.24	2.54	28
				3/8 EHS	A1	T2	9.24	3.97	43
				3/8 EHS	A1a	T2	9.24	2.44	26
			3/8 EHS	3/8 EHS	A1b	T2a	9.24	2.49	27
				3/8 EHS	A1a	T2a	9.24	2.51	27
				3/8 EHS	A1	T2b	9.24	3.98	43
		198.97	3/8 EHS	3/8 EHS	A1b	T2b	9.24	2.42	26
				7/16 EHS	A2a	T3	12.48	3.51	28
				7/16 EHS	A2	T3	12.48	6.34	51
7/16 EHS	7/16 EHS		A2b	T3a	12.48	3.57	29		
	7/16 EHS		A2a	T3a	12.48	3.6	29		
	7/16 EHS		A2b	T3b	12.48	3.5	28		
271.07	7/16 EHS	7/16 EHS	A2	T3b	12.48	6.32	51		
		7/16 EHS	A2a	T4	12.48	3.77	30		
		7/16 EHS	A2	T4	12.48	6.57	53		
	331.07	7/16 EHS	7/16 EHS	A2a	T4a	12.48	3.95	32	
			7/16 EHS	A2b	T4a	12.48	3.92	31	
			7/16 EHS	A2b	T4b	12.48	3.74	30	
		7/16 EHS	7/16 EHS	A2	T4b	12.48	6.56	53	
			7/16 EHS	A3	T5	12.48	7.15	57	
			7/16 EHS	A3a	T5	12.48	4.96	40	
	67.12	3/8 EHS	7/16 EHS	A3a	T5a	12.48	5.15	41	
			7/16 EHS	A3b	T5a	12.48	5.05	40	
			7/16 EHS	A3b	T5b	12.48	4.87	39	
126.87		3/8 EHS	7/16 EHS	A3	T5b	12.48	7.15	57	
			3/8 EHS	A1	27	9.24	3.58	39	
			3/8 EHS	A1a	27a	9.24	2.9	31	
		3/8 EHS	3/8 EHS	A1b	27b	9.24	2.36	26	
			3/8 EHS	A1	T2	9.24	3.88	42	
			3/8 EHS	A1a	T2	9.24	2.89	31	
198.97		3/8 EHS	3/8 EHS	A1b	T2a	9.24	2.13	23	
			3/8 EHS	A1a	T2a	9.24	2.98	32	
			3/8 EHS	A1b	T2b	9.24	2.12	23	
	7/16 EHS	3/8 EHS	A1	T2b	9.24	3.92	42		
		7/16 EHS	A2	T3	12.48	6.04	48		
		7/16 EHS	A2a	T3	12.48	4.27	34		
271.07	7/16 EHS	7/16 EHS	A2a	T3a	12.48	4.35	35		
		7/16 EHS	A2b	T3a	12.48	3.01	24		
		7/16 EHS	A2	T3b	12.48	6.07	49		
	331.07	7/16 EHS	7/16 EHS	A2b	T3b	12.48	2.99	24	
			7/16 EHS	A2	T4	12.48	6.28	50	
			7/16 EHS	A2a	T4	12.48	4.45	36	
		7/16 EHS	7/16 EHS	A2b	T4a	12.48	3.21	26	
			7/16 EHS	A2a	T4a	12.48	4.67	37	
			7/16 EHS	A2b	T4b	12.48	3.13	25	
	67.12	3/8 EHS	7/16 EHS	A2	T4b	12.48	6.32	51	
			7/16 EHS	A3a	T5	12.48	5.54	44	
			7/16 EHS	A3	T5	12.48	6.97	56	
7/16 EHS		7/16 EHS	A3a	T5a	12.48	5.74	46		
		7/16 EHS	A3b	T5a	12.48	4.61	37		
		7/16 EHS	A3	T5b	12.48	7	56		
1.2D + 1.0Di + 1.0Wi 240°	3/8 EHS	7/16 EHS	A3b	T5b	12.48	4.53	36		
		3/8 EHS	A1	27	9.24	3.4	37		

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0Di + 1.0Wi 300°	126.87	3/8 EHS	A1a	27a	9.24	3.24	35	
		3/8 EHS	A1b	27b	9.24	2.31	25	
		3/8 EHS	A1	T2	9.24	3.61	39	
		3/8 EHS	A1a	T2	9.24	3.34	36	
		3/8 EHS	A1b	T2a	9.24	2.04	22	
		3/8 EHS	A1a	T2a	9.24	3.39	37	
		3/8 EHS	A1	T2b	9.24	3.68	40	
		3/8 EHS	A1b	T2b	9.24	2.02	22	
		198.97	7/16 EHS	A2a	T3	12.48	5.05	40
			7/16 EHS	A2	T3	12.48	5.42	43
	7/16 EHS		A2a	T3a	12.48	5.1	41	
	7/16 EHS		A2b	T3a	12.48	2.86	23	
	7/16 EHS		A2b	T3b	12.48	2.84	23	
	7/16 EHS		A2	T3b	12.48	5.48	44	
	271.07		7/16 EHS	A2	T4	12.48	5.57	45
			7/16 EHS	A2a	T4	12.48	5.23	42
		7/16 EHS	A2b	T4a	12.48	2.85	23	
		7/16 EHS	A2a	T4a	12.48	5.38	43	
		7/16 EHS	A2b	T4b	12.48	2.85	23	
		7/16 EHS	A2	T4b	12.48	5.72	46	
331.07		7/16 EHS	A3	T5	12.48	6.48	52	
		7/16 EHS	A3a	T5	12.48	6.18	50	
		7/16 EHS	A3b	T5a	12.48	4.46	36	
		7/16 EHS	A3a	T5a	12.48	6.3	50	
	7/16 EHS	A3	T5b	12.48	6.59	53		
	7/16 EHS	A3b	T5b	12.48	4.46	36		
1.2D + 1.0Di + 1.0Wi 330°	67.12	3/8 EHS	A1	27	9.24	2.74	30	
		3/8 EHS	A1a	27a	9.24	3.41	37	
		3/8 EHS	A1b	27b	9.24	2.56	28	
		126.87	3/8 EHS	A1	T2	9.24	2.63	29
			3/8 EHS	A1a	T2	9.24	3.71	40
			3/8 EHS	A1b	T2a	9.24	2.47	27
			3/8 EHS	A1a	T2a	9.24	3.65	40
			3/8 EHS	A1b	T2b	9.24	2.48	27
			3/8 EHS	A1	T2b	9.24	2.74	30
		198.97	7/16 EHS	A2	T3	12.48	3.82	31
	7/16 EHS		A2a	T3	12.48	5.89	47	
	7/16 EHS		A2a	T3a	12.48	5.95	48	
	7/16 EHS		A2b	T3a	12.48	3.53	28	
	7/16 EHS		A2	T3b	12.48	3.86	31	
	7/16 EHS		A2b	T3b	12.48	3.62	29	
	271.07		7/16 EHS	A2	T4	12.48	4.06	33
			7/16 EHS	A2a	T4	12.48	6.21	50
		7/16 EHS	A2b	T4a	12.48	3.77	30	
		7/16 EHS	A2a	T4a	12.48	6.21	50	
		7/16 EHS	A2	T4b	12.48	4.24	34	
7/16 EHS		A2b	T4b	12.48	3.94	32		
331.07		7/16 EHS	A3a	T5	12.48	6.82	55	
		7/16 EHS	A3	T5	12.48	5.19	42	
		7/16 EHS	A3a	T5a	12.48	6.82	55	
		7/16 EHS	A3b	T5a	12.48	4.89	39	
	7/16 EHS	A3	T5b	12.48	5.38	43		
	7/16 EHS	A3b	T5b	12.48	5.05	40		
1.2D + 1.0Di + 1.0Wi 330°	67.12	3/8 EHS	A1	27	9.24	2.53	27	
		3/8 EHS	A1a	27a	9.24	3.34	36	
		3/8 EHS	A1b	27b	9.24	2.9	31	
		126.87	3/8 EHS	A1a	T2	9.24	3.63	39
			3/8 EHS	A1	T2	9.24	2.33	25
			3/8 EHS	A1a	T2a	9.24	3.6	39
			3/8 EHS	A1b	T2a	9.24	2.88	31
			3/8 EHS	A1	T2b	9.24	2.37	26
			3/8 EHS	A1b	T2b	9.24	2.9	31
		198.97	7/16 EHS	A2	T3	12.48	3.25	26
	7/16 EHS		A2a	T3	12.48	5.64	45	
	7/16 EHS		A2b	T3a	12.48	4.28	34	
	7/16 EHS		A2a	T3a	12.48	5.68	46	
	7/16 EHS		A2b	T3b	12.48	4.36	35	
	7/16 EHS		A2	T3b	12.48	3.23	26	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0Ev + 1.0Eh Normal	271.07	7/16 EHS	A2	T4	12.48	3.4	27	
		7/16 EHS	A2a	T4	12.48	5.96	48	
		7/16 EHS	A2b	T4a	12.48	4.44	36	
		7/16 EHS	A2a	T4a	12.48	5.92	47	
		7/16 EHS	A2b	T4b	12.48	4.65	37	
		7/16 EHS	A2	T4b	12.48	3.49	28	
		331.07	7/16 EHS	A3a	T5	12.48	6.66	53
			7/16 EHS	A3	T5	12.48	4.79	38
			7/16 EHS	A3b	T5a	12.48	5.43	43
			7/16 EHS	A3a	T5a	12.48	6.63	53
	7/16 EHS		A3b	T5b	12.48	5.61	45	
	7/16 EHS		A3	T5b	12.48	4.87	39	
	67.12	3/8 EHS	A1	27	9.24	2.19	24	
		3/8 EHS	A1a	27a	9.24	2.15	23	
		3/8 EHS	A1b	27b	9.24	2.13	23	
		126.87	3/8 EHS	A1	T2	9.24	1.89	20
			3/8 EHS	A1a	T2	9.24	1.84	20
			3/8 EHS	A1b	T2a	9.24	1.83	20
			3/8 EHS	A1a	T2a	9.24	1.85	20
			3/8 EHS	A1b	T2b	9.24	1.82	20
3/8 EHS			A1	T2b	9.24	1.89	20	
198.97		7/16 EHS	A2a	T3	12.48	2.41	19	
	7/16 EHS	A2	T3	12.48	2.39	19		
	7/16 EHS	A2b	T3a	12.48	2.42	19		
	7/16 EHS	A2a	T3a	12.48	2.42	19		
	7/16 EHS	A2b	T3b	12.48	2.41	19		
	7/16 EHS	A2	T3b	12.48	2.39	19		
	271.07	7/16 EHS	A2	T4	12.48	2.19	18	
		7/16 EHS	A2a	T4	12.48	2.2	18	
7/16 EHS		A2b	T4a	12.48	2.19	18		
7/16 EHS		A2a	T4a	12.48	2.19	18		
7/16 EHS		A2b	T4b	12.48	2.19	18		
331.07		7/16 EHS	A2	T4b	12.48	2.19	18	
		7/16 EHS	A3	T5	12.48	2.3	18	
		7/16 EHS	A3a	T5	12.48	2.31	18	
		7/16 EHS	A3a	T5a	12.48	2.3	18	
		7/16 EHS	A3b	T5a	12.48	2.28	18	
	7/16 EHS	A3	T5b	12.48	2.3	18		
	7/16 EHS	A3b	T5b	12.48	2.28	18		
	67.12	3/8 EHS	A1	27	9.24	2.21	24	
3/8 EHS		A1a	27a	9.24	2.13	23		
3/8 EHS		A1b	27b	9.24	2.13	23		
126.87		3/8 EHS	A1a	T2	9.24	1.8	19	
		3/8 EHS	A1	T2	9.24	1.92	21	
		3/8 EHS	A1b	T2a	9.24	1.83	20	
		3/8 EHS	A1a	T2a	9.24	1.81	20	
		3/8 EHS	A1b	T2b	9.24	1.82	20	
		3/8 EHS	A1	T2b	9.24	1.92	21	
198.97		7/16 EHS	A2a	T3	12.48	2.31	18	
	7/16 EHS	A2	T3	12.48	2.43	19		
	7/16 EHS	A2a	T3a	12.48	2.32	19		
	7/16 EHS	A2b	T3a	12.48	2.47	20		
	7/16 EHS	A2	T3b	12.48	2.44	20		
	7/16 EHS	A2b	T3b	12.48	2.46	20		
	271.07	7/16 EHS	A2a	T4	12.48	2.12	17	
		7/16 EHS	A2	T4	12.48	2.22	18	
7/16 EHS		A2b	T4a	12.48	2.24	18		
7/16 EHS		A2a	T4a	12.48	2.11	17		
7/16 EHS		A2	T4b	12.48	2.21	18		
7/16 EHS		A2b	T4b	12.48	2.24	18		
331.07		7/16 EHS	A3	T5	12.48	2.33	19	
		7/16 EHS	A3a	T5	12.48	2.25	18	
		7/16 EHS	A3b	T5a	12.48	2.31	18	
		7/16 EHS	A3a	T5a	12.48	2.25	18	
	7/16 EHS	A3	T5b	12.48	2.32	19		
	7/16 EHS	A3b	T5b	12.48	2.3	18		
	67.12	3/8 EHS	A1	27	9.24	2.22	24	
		3/8 EHS	A1a	27a	9.24	2.13	23	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%
1.2D + 1.0Ev + 1.0Eh 120°	126.87	3/8 EHS	A1b	27b	9.24	2.12	23
		3/8 EHS	A1a	T2	9.24	1.79	19
		3/8 EHS	A1	T2	9.24	1.93	21
		3/8 EHS	A1b	T2a	9.24	1.82	20
		3/8 EHS	A1a	T2a	9.24	1.8	19
		3/8 EHS	A1b	T2b	9.24	1.82	20
	198.97	3/8 EHS	A1	T2b	9.24	1.94	21
		7/16 EHS	A2	T3	12.48	2.48	20
		7/16 EHS	A2a	T3	12.48	2.26	18
		7/16 EHS	A2a	T3a	12.48	2.28	18
		7/16 EHS	A2b	T3a	12.48	2.45	20
		7/16 EHS	A2	T3b	12.48	2.49	20
	271.07	7/16 EHS	A2b	T3b	12.48	2.45	20
		7/16 EHS	A2a	T4	12.48	2.07	17
		7/16 EHS	A2	T4	12.48	2.27	18
		7/16 EHS	A2a	T4a	12.48	2.07	17
		7/16 EHS	A2b	T4a	12.48	2.23	18
		7/16 EHS	A2b	T4b	12.48	2.22	18
	331.07	7/16 EHS	A2	T4b	12.48	2.26	18
		7/16 EHS	A3	T5	12.48	2.36	19
		7/16 EHS	A3a	T5	12.48	2.23	18
		7/16 EHS	A3b	T5a	12.48	2.3	18
		7/16 EHS	A3a	T5a	12.48	2.22	18
		7/16 EHS	A3b	T5b	12.48	2.29	18
1.2D + 1.0Ev + 1.0Eh 180°	67.12	3/8 EHS	A3	T5b	12.48	2.36	19
		3/8 EHS	A1	27	9.24	2.22	24
		3/8 EHS	A1a	27a	9.24	2.12	23
		3/8 EHS	A1b	27b	9.24	2.12	23
		3/8 EHS	A1a	T2	9.24	1.78	19
		3/8 EHS	A1	T2	9.24	1.95	21
	126.87	3/8 EHS	A1a	T2a	9.24	1.79	19
		3/8 EHS	A1b	T2a	9.24	1.81	20
		3/8 EHS	A1b	T2b	9.24	1.8	20
		3/8 EHS	A1	T2b	9.24	1.96	21
		7/16 EHS	A2a	T3	12.48	2.24	18
		7/16 EHS	A2	T3	12.48	2.54	20
	198.97	7/16 EHS	A2b	T3a	12.48	2.41	19
		7/16 EHS	A2a	T3a	12.48	2.25	18
		7/16 EHS	A2b	T3b	12.48	2.41	19
		7/16 EHS	A2	T3b	12.48	2.55	20
		7/16 EHS	A2a	T4	12.48	2.05	16
		7/16 EHS	A2	T4	12.48	2.33	19
	271.07	7/16 EHS	A2b	T4a	12.48	2.2	18
		7/16 EHS	A2a	T4a	12.48	2.05	16
		7/16 EHS	A2b	T4b	12.48	2.18	18
		7/16 EHS	A2	T4b	12.48	2.32	19
		7/16 EHS	A3a	T5	12.48	2.21	18
		7/16 EHS	A3	T5	12.48	2.4	19
331.07	7/16 EHS	A3b	T5a	12.48	2.28	18	
	7/16 EHS	A3a	T5a	12.48	2.21	18	
	7/16 EHS	A3	T5b	12.48	2.39	19	
	7/16 EHS	A3b	T5b	12.48	2.27	18	
	3/8 EHS	A1	27	9.24	2.23	24	
	3/8 EHS	A1a	27a	9.24	2.13	23	
67.12	3/8 EHS	A1b	27b	9.24	2.11	23	
	3/8 EHS	A1	T2	9.24	1.97	21	
	3/8 EHS	A1a	T2	9.24	1.79	19	
	3/8 EHS	A1b	T2a	9.24	1.77	19	
	3/8 EHS	A1a	T2a	9.24	1.8	19	
	3/8 EHS	A1b	T2b	9.24	1.77	19	
126.87	3/8 EHS	A1	T2b	9.24	1.98	21	
	7/16 EHS	A2a	T3	12.48	2.29	18	
	7/16 EHS	A2	T3	12.48	2.61	21	
	7/16 EHS	A2a	T3a	12.48	2.3	18	
	7/16 EHS	A2b	T3a	12.48	2.29	18	
	7/16 EHS	A2	T3b	12.48	2.61	21	
198.97	7/16 EHS	A2b	T3b	12.48	2.29	18	
	7/16 EHS	A2a	T4	12.48	2.09	17	
	7/16 EHS	A2a	T4	12.48	2.05	16	
	7/16 EHS	A2b	T4a	12.48	2.05	16	
	7/16 EHS	A2b	T4b	12.48	2.18	18	
	7/16 EHS	A2	T4b	12.48	2.32	19	
271.07	7/16 EHS	A3a	T5	12.48	2.21	18	
	7/16 EHS	A3	T5	12.48	2.4	19	
	7/16 EHS	A3b	T5a	12.48	2.28	18	
	7/16 EHS	A3a	T5a	12.48	2.21	18	
	7/16 EHS	A3	T5b	12.48	2.39	19	
	7/16 EHS	A3b	T5b	12.48	2.27	18	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0Ev + 1.0Eh 210°	331.07	7/16 EHS	A2	T4	12.48	2.38	19	
		7/16 EHS	A2a	T4a	12.48	2.1	17	
		7/16 EHS	A2b	T4a	12.48	2.09	17	
		7/16 EHS	A2	T4b	12.48	2.38	19	
		7/16 EHS	A2b	T4b	12.48	2.07	17	
		7/16 EHS	A3	T5	12.48	2.43	20	
		7/16 EHS	A3a	T5	12.48	2.24	18	
		7/16 EHS	A3b	T5a	12.48	2.21	18	
		7/16 EHS	A3a	T5a	12.48	2.24	18	
		7/16 EHS	A3b	T5b	12.48	2.2	18	
		7/16 EHS	A3	T5b	12.48	2.43	19	
		67.12	3/8 EHS	A1	27	9.24	2.23	24
	126.87	3/8 EHS	A1a	27a	9.24	2.13	23	
		3/8 EHS	A1b	27b	9.24	2.1	23	
		3/8 EHS	A1	T2	9.24	1.97	21	
		3/8 EHS	A1a	T2	9.24	1.81	20	
		3/8 EHS	A1b	T2a	9.24	1.76	19	
		3/8 EHS	A1a	T2a	9.24	1.82	20	
		3/8 EHS	A1	T2b	9.24	1.97	21	
		3/8 EHS	A1b	T2b	9.24	1.76	19	
	198.97	7/16 EHS	A2	T3	12.48	2.6	21	
		7/16 EHS	A2a	T3	12.48	2.35	19	
		7/16 EHS	A2a	T3a	12.48	2.35	19	
		7/16 EHS	A2b	T3a	12.48	2.25	18	
7/16 EHS		A2	T3b	12.48	2.59	21		
7/16 EHS		A2b	T3b	12.48	2.25	18		
271.07		7/16 EHS	A2a	T4	12.48	2.14	17	
7/16 EHS		A2	T4	12.48	2.37	19		
7/16 EHS		A2a	T4a	12.48	2.15	17		
7/16 EHS		A2b	T4a	12.48	2.05	16		
7/16 EHS		A2b	T4b	12.48	2.03	16		
331.07		7/16 EHS	A2	T4b	12.48	2.37	19	
1.2D + 1.0Ev + 1.0Eh 240°	331.07	7/16 EHS	A3	T5	12.48	2.42	19	
		7/16 EHS	A3a	T5	12.48	2.27	18	
		7/16 EHS	A3b	T5a	12.48	2.18	17	
		7/16 EHS	A3a	T5a	12.48	2.28	18	
		7/16 EHS	A3b	T5b	12.48	2.17	17	
		7/16 EHS	A3	T5b	12.48	2.42	19	
		67.12	3/8 EHS	A1	27	9.24	2.22	24
		3/8 EHS	A1a	27a	9.24	2.14	23	
		126.87	3/8 EHS	A1b	27b	9.24	2.1	23
			3/8 EHS	A1	T2	9.24	1.96	21
			3/8 EHS	A1a	T2	9.24	1.83	20
			3/8 EHS	A1b	T2a	9.24	1.76	19
	3/8 EHS		A1a	T2a	9.24	1.83	20	
	3/8 EHS		A1	T2b	9.24	1.96	21	
	3/8 EHS		A1b	T2b	9.24	1.76	19	
	198.97		7/16 EHS	A2	T3	12.48	2.55	20
	7/16 EHS	A2a	T3	12.48	2.41	19		
	7/16 EHS	A2a	T3a	12.48	2.41	19		
	7/16 EHS	A2b	T3a	12.48	2.24	18		
	7/16 EHS	A2	T3b	12.48	2.54	20		
	7/16 EHS	A2b	T3b	12.48	2.24	18		
	271.07	7/16 EHS	A2	T4	12.48	2.32	19	
	7/16 EHS	A2a	T4	12.48	2.2	18		
	7/16 EHS	A2b	T4a	12.48	2.04	16		
7/16 EHS	A2a	T4a	12.48	2.21	18			
7/16 EHS	A2	T4b	12.48	2.33	19			
331.07	7/16 EHS	A2b	T4b	12.48	2.03	16		
	7/16 EHS	A3a	T5	12.48	2.31	18		
	7/16 EHS	A3	T5	12.48	2.39	19		
	7/16 EHS	A3a	T5a	12.48	2.31	19		
	7/16 EHS	A3b	T5a	12.48	2.17	17		
	7/16 EHS	A3b	T5b	12.48	2.17	17		
	7/16 EHS	A3	T5b	12.48	2.4	19		
	67.12	3/8 EHS	A1	27	9.24	2.21	24	
		3/8 EHS	A1a	27a	9.24	2.15	23	
		3/8 EHS	A1b	27b	9.24	2.11	23	
		1.2D + 1.0Ev + 1.0Eh 300°	3/8 EHS	A1	27	9.24	2.21	24
			3/8 EHS	A1a	27a	9.24	2.15	23
3/8 EHS			A1b	27b	9.24	2.11	23	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.2D + 1.0Ev + 1.0Eh 330°	126.87	3/8 EHS	A1a	T2	9.24	1.84	20	
		3/8 EHS	A1	T2	9.24	1.92	21	
		3/8 EHS	A1a	T2a	9.24	1.85	20	
		3/8 EHS	A1b	T2a	9.24	1.78	19	
		3/8 EHS	A1	T2b	9.24	1.92	21	
		3/8 EHS	A1b	T2b	9.24	1.77	19	
	198.97	7/16 EHS	A2a	T3	12.48	2.47	20	
			A2	T3	12.48	2.44	20	
			A2a	T3a	12.48	2.48	20	
			A2b	T3a	12.48	2.31	19	
			A2b	T3b	12.48	2.3	18	
			A2	T3b	12.48	2.43	19	
	271.07	7/16 EHS	A2	T4	12.48	2.22	18	
			A2a	T4	12.48	2.25	18	
			A2b	T4a	12.48	2.09	17	
			A2a	T4a	12.48	2.26	18	
			A2	T4b	12.48	2.22	18	
			A2b	T4b	12.48	2.1	17	
	331.07	7/16 EHS	A3a	T5	12.48	2.34	19	
			A3	T5	12.48	2.33	19	
			A3b	T5a	12.48	2.21	18	
			A3a	T5a	12.48	2.34	19	
			A3	T5b	12.48	2.33	19	
			A3b	T5b	12.48	2.21	18	
	0.9D - 1.0Ev + 1.0Eh Normal	67.12	3/8 EHS	A1	27	9.24	2.2	24
			3/8 EHS	A1a	27a	9.24	2.15	23
			3/8 EHS	A1b	27b	9.24	2.12	23
		126.87	3/8 EHS	A1a	T2	9.24	1.84	20
				A1	T2	9.24	1.9	21
				A1b	T2a	9.24	1.81	20
				A1a	T2a	9.24	1.85	20
				A1b	T2b	9.24	1.8	19
				A1	T2b	9.24	1.9	21
198.97		7/16 EHS	A2	T3	12.48	2.4	19	
			A2a	T3	12.48	2.44	20	
			A2a	T3a	12.48	2.45	20	
			A2b	T3a	12.48	2.38	19	
			A2b	T3b	12.48	2.36	19	
			A2	T3b	12.48	2.4	19	
271.07		7/16 EHS	A2	T4	12.48	2.19	18	
			A2a	T4	12.48	2.23	18	
			A2b	T4a	12.48	2.15	17	
			A2a	T4a	12.48	2.23	18	
			A2b	T4b	12.48	2.16	17	
			A2	T4b	12.48	2.19	18	
331.07		7/16 EHS	A3	T5	12.48	2.31	18	
			A3a	T5	12.48	2.33	19	
			A3b	T5a	12.48	2.25	18	
			A3a	T5a	12.48	2.32	19	
			A3	T5b	12.48	2.31	18	
			A3b	T5b	12.48	2.25	18	
0.9D - 1.0Ev + 1.0Eh Normal		67.12	3/8 EHS	A1	27	9.24	2.2	24
			3/8 EHS	A1a	27a	9.24	2.16	23
			3/8 EHS	A1b	27b	9.24	2.14	23
		126.87	3/8 EHS	A1a	T2	9.24	1.86	20
				A1	T2	9.24	1.92	21
				A1a	T2a	9.24	1.87	20
	A1b			T2a	9.24	1.85	20	
	A1			T2b	9.24	1.92	21	
	A1b			T2b	9.24	1.84	20	
	198.97	7/16 EHS	A2a	T3	12.48	2.44	20	
			A2	T3	12.48	2.42	19	
			A2b	T3a	12.48	2.45	20	
			A2a	T3a	12.48	2.46	20	
			A2	T3b	12.48	2.43	19	
			A2b	T3b	12.48	2.44	20	
	271.07	7/16 EHS	A2a	T4	12.48	2.24	18	
			A2	T4	12.48	2.23	18	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%			
0.9D - 1.0Ev + 1.0Eh 60°	331.07	7/16 EHS	A2b	T4a	12.48	2.23	18			
		7/16 EHS	A2a	T4a	12.48	2.23	18			
		7/16 EHS	A2b	T4b	12.48	2.23	18			
		7/16 EHS	A2	T4b	12.48	2.23	18			
		7/16 EHS	A3a	T5	12.48	2.34	19			
		7/16 EHS	A3	T5	12.48	2.33	19			
		7/16 EHS	A3b	T5a	12.48	2.31	18			
		7/16 EHS	A3a	T5a	12.48	2.33	19			
		7/16 EHS	A3b	T5b	12.48	2.31	18			
		7/16 EHS	A3	T5b	12.48	2.33	19			
		67.12	3/8 EHS	A1	T7	9.24	2.22	24		
		3/8 EHS	A1a	T7a	9.24	2.14	23			
	126.87	3/8 EHS	A1b	T7b	9.24	2.14	23			
		3/8 EHS	A1a	T2	9.24	1.82	20			
		3/8 EHS	A1	T2	9.24	1.94	21			
		3/8 EHS	A1a	T2a	9.24	1.84	20			
		3/8 EHS	A1b	T2a	9.24	1.85	20			
		3/8 EHS	A1b	T2b	9.24	1.85	20			
		3/8 EHS	A1	T2b	9.24	1.95	21			
		198.97	7/16 EHS	A2	T3	12.48	2.46	20		
			7/16 EHS	A2a	T3	12.48	2.34	19		
			7/16 EHS	A2a	T3a	12.48	2.36	19		
			7/16 EHS	A2b	T3a	12.48	2.5	20		
			7/16 EHS	A2	T3b	12.48	2.47	20		
7/16 EHS	A2b		T3b	12.48	2.5	20				
271.07	7/16 EHS		A2	T4	12.48	2.27	18			
	7/16 EHS		A2a	T4	12.48	2.16	17			
	7/16 EHS		A2b	T4a	12.48	2.28	18			
	7/16 EHS		A2a	T4a	12.48	2.15	17			
	7/16 EHS		A2b	T4b	12.48	2.28	18			
	7/16 EHS		A2	T4b	12.48	2.25	18			
	331.07	7/16 EHS	A3	T5	12.48	2.36	19			
		7/16 EHS	A3a	T5	12.48	2.28	18			
		7/16 EHS	A3a	T5a	12.48	2.28	18			
		7/16 EHS	A3b	T5a	12.48	2.34	19			
		7/16 EHS	A3b	T5b	12.48	2.33	19			
		7/16 EHS	A3	T5b	12.48	2.35	19			
0.9D - 1.0Ev + 1.0Eh 90°		67.12	3/8 EHS	A1	T7	9.24	2.23	24		
			3/8 EHS	A1a	T7a	9.24	2.14	23		
			3/8 EHS	A1b	T7b	9.24	2.13	23		
			126.87	3/8 EHS	A1a	T2	9.24	1.81	20	
				3/8 EHS	A1	T2	9.24	1.96	21	
				3/8 EHS	A1a	T2a	9.24	1.82	20	
	3/8 EHS			A1b	T2a	9.24	1.85	20		
	3/8 EHS			A1b	T2b	9.24	1.84	20		
	3/8 EHS			A1	T2b	9.24	1.97	21		
	198.97			7/16 EHS	A2	T3	12.48	2.52	20	
				7/16 EHS	A2a	T3	12.48	2.3	18	
				7/16 EHS	A2a	T3a	12.48	2.31	19	
		7/16 EHS		A2b	T3a	12.48	2.49	20		
		7/16 EHS		A2	T3b	12.48	2.53	20		
		7/16 EHS		A2b	T3b	12.48	2.48	20		
		271.07	7/16 EHS	A2	T4	12.48	2.31	19		
			7/16 EHS	A2a	T4	12.48	2.11	17		
			7/16 EHS	A2a	T4a	12.48	2.11	17		
			7/16 EHS	A2b	T4a	12.48	2.27	18		
			7/16 EHS	A2b	T4b	12.48	2.26	18		
			7/16 EHS	A2	T4b	12.48	2.3	18		
	331.07		7/16 EHS	A3a	T5	12.48	2.26	18		
			7/16 EHS	A3	T5	12.48	2.39	19		
			7/16 EHS	A3a	T5a	12.48	2.25	18		
7/16 EHS			A3b	T5a	12.48	2.33	19			
7/16 EHS			A3	T5b	12.48	2.39	19			
7/16 EHS			A3b	T5b	12.48	2.32	19			
67.12		3/8 EHS	A1	T7	9.24	2.23	24			
		3/8 EHS	A1a	T7a	9.24	2.13	23			
		126.87	3/8 EHS	A1b	T7b	9.24	2.13	23		
			3/8 EHS	A1a	T2	9.24	1.8	20		
			0.9D - 1.0Ev + 1.0Eh 120°	67.12	3/8 EHS	A1	T7	9.24	2.23	24
					3/8 EHS	A1a	T7a	9.24	2.13	23
	126.87				3/8 EHS	A1b	T7b	9.24	2.13	23
					3/8 EHS	A1a	T2	9.24	1.8	20

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%
0.9D - 1.0Ev + 1.0Eh 180°	198.97	3/8 EHS	A1	T2	9.24	1.98	21
		3/8 EHS	A1a	T2a	9.24	1.81	20
		3/8 EHS	A1b	T2a	9.24	1.83	20
		3/8 EHS	A1	T2b	9.24	1.98	21
		3/8 EHS	A1b	T2b	9.24	1.83	20
		7/16 EHS	A2	T3	12.48	2.58	21
	271.07	7/16 EHS	A2a	T3	12.48	2.28	18
		7/16 EHS	A2b	T3a	12.48	2.44	20
		7/16 EHS	A2a	T3a	12.48	2.28	18
		7/16 EHS	A2b	T3b	12.48	2.44	20
		7/16 EHS	A2	T3b	12.48	2.59	21
		7/16 EHS	A2a	T4	12.48	2.09	17
	331.07	7/16 EHS	A2	T4	12.48	2.37	19
		7/16 EHS	A2a	T4a	12.48	2.09	17
		7/16 EHS	A2b	T4a	12.48	2.24	18
		7/16 EHS	A2b	T4b	12.48	2.22	18
		7/16 EHS	A2	T4b	12.48	2.36	19
		7/16 EHS	A3	T5	12.48	2.43	19
	67.12	7/16 EHS	A3a	T5	12.48	2.24	18
		7/16 EHS	A3a	T5a	12.48	2.24	18
		7/16 EHS	A3b	T5a	12.48	2.31	18
		7/16 EHS	A3	T5b	12.48	2.42	19
		7/16 EHS	A3b	T5b	12.48	2.3	18
		3/8 EHS	A1	27	9.24	2.24	24
	126.87	3/8 EHS	A1a	27a	9.24	2.14	23
		3/8 EHS	A1b	27b	9.24	2.12	23
		3/8 EHS	A1a	T2	9.24	1.82	20
		3/8 EHS	A1	T2	9.24	2	22
		3/8 EHS	A1b	T2a	9.24	1.8	19
		3/8 EHS	A1a	T2a	9.24	1.82	20
	198.97	3/8 EHS	A1	T2b	9.24	2	22
		3/8 EHS	A1b	T2b	9.24	1.79	19
		7/16 EHS	A2	T3	12.48	2.65	21
7/16 EHS		A2a	T3	12.48	2.33	19	
7/16 EHS		A2b	T3a	12.48	2.32	19	
7/16 EHS		A2a	T3a	12.48	2.33	19	
271.07	7/16 EHS	A2b	T3b	12.48	2.33	19	
	7/16 EHS	A2	T3b	12.48	2.65	21	
	7/16 EHS	A2	T4	12.48	2.43	19	
	7/16 EHS	A2a	T4	12.48	2.13	17	
	7/16 EHS	A2b	T4a	12.48	2.13	17	
	7/16 EHS	A2a	T4a	12.48	2.14	17	
331.07	7/16 EHS	A2	T4b	12.48	2.42	19	
	7/16 EHS	A2b	T4b	12.48	2.11	17	
	7/16 EHS	A3	T5	12.48	2.46	20	
	7/16 EHS	A3a	T5	12.48	2.26	18	
	7/16 EHS	A3b	T5a	12.48	2.24	18	
	7/16 EHS	A3a	T5a	12.48	2.27	18	
67.12	7/16 EHS	A3	T5b	12.48	2.46	20	
	7/16 EHS	A3b	T5b	12.48	2.22	18	
	3/8 EHS	A1	27	9.24	2.24	24	
	3/8 EHS	A1a	27a	9.24	2.14	23	
	3/8 EHS	A1b	27b	9.24	2.11	23	
	126.87	3/8 EHS	A1a	T2	9.24	1.83	20
3/8 EHS		A1	T2	9.24	2	22	
3/8 EHS		A1a	T2a	9.24	1.84	20	
3/8 EHS		A1b	T2a	9.24	1.79	19	
3/8 EHS		A1	T2b	9.24	2	22	
3/8 EHS		A1b	T2b	9.24	1.78	19	
198.97	7/16 EHS	A2a	T3	12.48	2.39	19	
	7/16 EHS	A2	T3	12.48	2.63	21	
	7/16 EHS	A2a	T3a	12.48	2.39	19	
	7/16 EHS	A2b	T3a	12.48	2.28	18	
	7/16 EHS	A2b	T3b	12.48	2.28	18	
	7/16 EHS	A2	T3b	12.48	2.63	21	
271.07	7/16 EHS	A2	T4	12.48	2.41	19	
	7/16 EHS	A2a	T4	12.48	2.18	17	
	7/16 EHS	A2b	T4a	12.48	2.08	17	
	7/16 EHS	A2b	T4a	12.48	2.08	17	



DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
0.9D - 1.0Ev + 1.0Eh 240°	331.07	7/16 EHS	A2a	T4a	12.48	2.19	18	
		7/16 EHS	A2	T4b	12.48	2.41	19	
		7/16 EHS	A2b	T4b	12.48	2.07	17	
		7/16 EHS	A3a	T5	12.48	2.3	18	
		7/16 EHS	A3	T5	12.48	2.45	20	
		7/16 EHS	A3b	T5a	12.48	2.21	18	
		7/16 EHS	A3a	T5a	12.48	2.31	19	
		7/16 EHS	A3	T5b	12.48	2.46	20	
		7/16 EHS	A3b	T5b	12.48	2.2	18	
	67.12	3/8 EHS	A1	27	9.24	2.23	24	
		3/8 EHS	A1a	27a	9.24	2.15	23	
		3/8 EHS	A1b	27b	9.24	2.11	23	
		126.87	3/8 EHS	A1a	T2	9.24	1.85	20
			3/8 EHS	A1	T2	9.24	1.98	21
			3/8 EHS	A1a	T2a	9.24	1.86	20
			3/8 EHS	A1b	T2a	9.24	1.79	19
			3/8 EHS	A1b	T2b	9.24	1.78	19
			3/8 EHS	A1	T2b	9.24	1.98	21
198.97	7/16 EHS	A2	T3	12.48	2.59	21		
	7/16 EHS	A2a	T3	12.48	2.45	20		
	7/16 EHS	A2a	T3a	12.48	2.45	20		
	7/16 EHS	A2b	T3a	12.48	2.28	18		
	7/16 EHS	A2	T3b	12.48	2.58	21		
	7/16 EHS	A2b	T3b	12.48	2.27	18		
	271.07	7/16 EHS	A2	T4	12.48	2.36	19	
		7/16 EHS	A2a	T4	12.48	2.24	18	
		7/16 EHS	A2b	T4a	12.48	2.08	17	
7/16 EHS		A2a	T4a	12.48	2.25	18		
7/16 EHS		A2b	T4b	12.48	2.07	17		
7/16 EHS		A2	T4b	12.48	2.37	19		
0.9D - 1.0Ev + 1.0Eh 300°	331.07	7/16 EHS	A3	T5	12.48	2.42	19	
		7/16 EHS	A3a	T5	12.48	2.34	19	
		7/16 EHS	A3a	T5a	12.48	2.34	19	
		7/16 EHS	A3b	T5a	12.48	2.2	18	
		7/16 EHS	A3b	T5b	12.48	2.2	18	
		7/16 EHS	A3	T5b	12.48	2.43	19	
		67.12	3/8 EHS	A1	27	9.24	2.22	24
			3/8 EHS	A1a	27a	9.24	2.16	23
			3/8 EHS	A1b	27b	9.24	2.12	23
	126.87		3/8 EHS	A1	T2	9.24	1.94	21
			3/8 EHS	A1a	T2	9.24	1.87	20
			3/8 EHS	A1b	T2a	9.24	1.81	20
			3/8 EHS	A1a	T2a	9.24	1.88	20
			3/8 EHS	A1	T2b	9.24	1.94	21
			3/8 EHS	A1b	T2b	9.24	1.8	19
	198.97	7/16 EHS	A2	T3	12.48	2.47	20	
		7/16 EHS	A2a	T3	12.48	2.5	20	
		7/16 EHS	A2b	T3a	12.48	2.35	19	
7/16 EHS		A2a	T3a	12.48	2.51	20		
7/16 EHS		A2b	T3b	12.48	2.34	19		
7/16 EHS		A2	T3b	12.48	2.47	20		
271.07		7/16 EHS	A2a	T4	12.48	2.29	18	
		7/16 EHS	A2	T4	12.48	2.26	18	
		7/16 EHS	A2a	T4a	12.48	2.29	18	
	7/16 EHS	A2b	T4a	12.48	2.14	17		
	7/16 EHS	A2	T4b	12.48	2.26	18		
	7/16 EHS	A2b	T4b	12.48	2.14	17		
	331.07	7/16 EHS	A3	T5	12.48	2.36	19	
		7/16 EHS	A3a	T5	12.48	2.37	19	
		7/16 EHS	A3b	T5a	12.48	2.24	18	
7/16 EHS		A3a	T5a	12.48	2.37	19		
7/16 EHS		A3	T5b	12.48	2.36	19		
7/16 EHS		A3b	T5b	12.48	2.25	18		
0.9D - 1.0Ev + 1.0Eh 330°		67.12	3/8 EHS	A1	27	9.24	2.21	24
			3/8 EHS	A1a	27a	9.24	2.16	23
			3/8 EHS	A1b	27b	9.24	2.13	23
	126.87	3/8 EHS	A1	T2	9.24	1.92	21	
		3/8 EHS	A1a	T2	9.24	1.87	20	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.0D + 1.0W Service Normal	198.97	3/8 EHS	A1a	T2a	9.24	1.88	20	
		3/8 EHS	A1b	T2a	9.24	1.83	20	
		3/8 EHS	A1	T2b	9.24	1.93	21	
		3/8 EHS	A1b	T2b	9.24	1.82	20	
		7/16 EHS	A2	T3	12.48	2.43	20	
		7/16 EHS	A2a	T3	12.48	2.48	20	
		7/16 EHS	A2b	T3a	12.48	2.41	19	
		7/16 EHS	A2a	T3a	12.48	2.49	20	
		7/16 EHS	A2b	T3b	12.48	2.4	19	
		7/16 EHS	A2	T3b	12.48	2.43	19	
		271.07	7/16 EHS	A2a	T4	12.48	2.27	18
		7/16 EHS	A2	T4	12.48	2.23	18	
	7/16 EHS	A2a	T4a	12.48	2.27	18		
	7/16 EHS	A2b	T4a	12.48	2.19	18		
	7/16 EHS	A2b	T4b	12.48	2.2	18		
	7/16 EHS	A2	T4b	12.48	2.23	18		
	331.07	7/16 EHS	A3	T5	12.48	2.34	19	
	7/16 EHS	A3a	T5	12.48	2.36	19		
	7/16 EHS	A3b	T5a	12.48	2.28	18		
	7/16 EHS	A3a	T5a	12.48	2.35	19		
	7/16 EHS	A3	T5b	12.48	2.34	19		
	7/16 EHS	A3b	T5b	12.48	2.28	18		
	67.12	3/8 EHS	A1	27	9.24	1.87	20	
	3/8 EHS	A1a	27a	9.24	2.35	25		
	3/8 EHS	A1b	27b	9.24	2.32	25		
	126.87	3/8 EHS	A1a	T2	9.24	2.12	23	
	3/8 EHS	A1	T2	9.24	1.48	16		
	3/8 EHS	A1b	T2a	9.24	2.1	23		
	3/8 EHS	A1a	T2a	9.24	2.13	23		
	3/8 EHS	A1	T2b	9.24	1.48	16		
	3/8 EHS	A1b	T2b	9.24	2.1	23		
	198.97	7/16 EHS	A2a	T3	12.48	2.97	24	
	7/16 EHS	A2	T3	12.48	1.56	12		
7/16 EHS	A2a	T3a	12.48	2.99	24			
7/16 EHS	A2b	T3a	12.48	2.98	24			
7/16 EHS	A2	T3b	12.48	1.56	13			
7/16 EHS	A2b	T3b	12.48	2.96	24			
271.07	7/16 EHS	A2	T4	12.48	1.56	13		
7/16 EHS	A2a	T4	12.48	2.81	23			
7/16 EHS	A2a	T4a	12.48	2.7	22			
7/16 EHS	A2b	T4a	12.48	2.68	21			
7/16 EHS	A2	T4b	12.48	1.57	13			
7/16 EHS	A2b	T4b	12.48	2.78	22			
331.07	7/16 EHS	A3	T5	12.48	2.13	17		
7/16 EHS	A3a	T5	12.48	2.82	23			
7/16 EHS	A3a	T5a	12.48	2.74	22			
7/16 EHS	A3b	T5a	12.48	2.7	22			
7/16 EHS	A3	T5b	12.48	2.13	17			
7/16 EHS	A3b	T5b	12.48	2.77	22			
67.12	3/8 EHS	A1	27	9.24	2.06	22		
3/8 EHS	A1a	27a	9.24	1.98	21			
3/8 EHS	A1b	27b	9.24	2.47	27			
126.87	3/8 EHS	A1a	T2	9.24	1.63	18		
3/8 EHS	A1	T2	9.24	1.75	19			
3/8 EHS	A1a	T2a	9.24	1.63	18			
3/8 EHS	A1b	T2a	9.24	2.32	25			
3/8 EHS	A1	T2b	9.24	1.75	19			
3/8 EHS	A1b	T2b	9.24	2.32	25			
198.97	7/16 EHS	A2a	T3	12.48	1.99	16		
7/16 EHS	A2	T3	12.48	2.11	17			
7/16 EHS	A2a	T3a	12.48	2	16			
7/16 EHS	A2b	T3a	12.48	3.47	28			
7/16 EHS	A2b	T3b	12.48	3.47	28			
7/16 EHS	A2	T3b	12.48	2.12	17			
271.07	7/16 EHS	A2a	T4	12.48	2.01	16		
7/16 EHS	A2	T4	12.48	2.13	17			
7/16 EHS	A2b	T4a	12.48	3.19	26			
7/16 EHS	A2a	T4a	12.48	1.9	15			

## DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%
1.0D + 1.0W Service 90°	331.07	7/16 EHS	A2	T4b	12.48	2.03	16
		7/16 EHS	A2b	T4b	12.48	3.18	26
		7/16 EHS	A3a	T5	12.48	2.36	19
		7/16 EHS	A3	T5	12.48	2.45	20
		7/16 EHS	A3b	T5a	12.48	2.96	24
		7/16 EHS	A3a	T5a	12.48	2.26	18
	67.12	7/16 EHS	A3	T5b	12.48	2.36	19
		7/16 EHS	A3b	T5b	12.48	2.96	24
		3/8 EHS	A1	27	9.24	2.24	24
		3/8 EHS	A1a	27a	9.24	1.84	20
		3/8 EHS	A1b	27b	9.24	2.43	26
		3/8 EHS	A1a	T2	9.24	1.43	15
	126.87	3/8 EHS	A1	T2	9.24	1.99	22
		3/8 EHS	A1a	T2a	9.24	1.44	16
		3/8 EHS	A1b	T2a	9.24	2.24	24
		3/8 EHS	A1b	T2b	9.24	2.24	24
		3/8 EHS	A1	T2b	9.24	1.99	22
		7/16 EHS	A2	T3	12.48	2.6	21
	198.97	7/16 EHS	A2a	T3	12.48	1.58	13
		7/16 EHS	A2a	T3a	12.48	1.6	13
		7/16 EHS	A2b	T3a	12.48	3.29	26
		7/16 EHS	A2	T3b	12.48	2.61	21
		7/16 EHS	A2b	T3b	12.48	3.3	26
		7/16 EHS	A2	T4	12.48	2.54	20
271.07	7/16 EHS	A2a	T4	12.48	1.62	13	
	7/16 EHS	A2b	T4a	12.48	3.05	24	
	7/16 EHS	A2a	T4a	12.48	1.57	13	
	7/16 EHS	A2b	T4b	12.48	3	24	
	7/16 EHS	A2	T4b	12.48	2.41	19	
	7/16 EHS	A3	T5	12.48	2.7	22	
331.07	7/16 EHS	A3a	T5	12.48	2.14	17	
	7/16 EHS	A3a	T5a	12.48	2.1	17	
	7/16 EHS	A3b	T5a	12.48	2.9	23	
	7/16 EHS	A3b	T5b	12.48	2.87	23	
	7/16 EHS	A3	T5b	12.48	2.6	21	
	3/8 EHS	A1	27	9.24	2.42	26	
67.12	3/8 EHS	A1a	27a	9.24	1.78	19	
	3/8 EHS	A1b	27b	9.24	2.3	25	
	3/8 EHS	A1a	T2	9.24	1.34	14	
	3/8 EHS	A1	T2	9.24	2.23	24	
	3/8 EHS	A1a	T2a	9.24	1.35	15	
	3/8 EHS	A1b	T2a	9.24	2.06	22	
126.87	3/8 EHS	A1b	T2b	9.24	2.05	22	
	3/8 EHS	A1	T2b	9.24	2.24	24	
	3/8 EHS	A2	T3	12.48	3.08	25	
	7/16 EHS	A2a	T3	12.48	1.42	11	
	7/16 EHS	A2b	T3a	12.48	2.9	23	
	7/16 EHS	A2a	T3a	12.48	1.43	11	
198.97	7/16 EHS	A2b	T3b	12.48	2.9	23	
	7/16 EHS	A2	T3b	12.48	3.09	25	
	7/16 EHS	A2	T4	12.48	2.91	23	
	7/16 EHS	A2a	T4	12.48	1.41	11	
	7/16 EHS	A2b	T4a	12.48	2.74	22	
	7/16 EHS	A2a	T4a	12.48	1.42	11	
271.07	7/16 EHS	A2b	T4b	12.48	2.64	21	
	7/16 EHS	A2	T4b	12.48	2.81	22	
	7/16 EHS	A3a	T5	12.48	2.03	16	
	7/16 EHS	A3	T5	12.48	2.92	23	
	7/16 EHS	A3b	T5a	12.48	2.76	22	
	7/16 EHS	A3a	T5a	12.48	2.04	16	
331.07	7/16 EHS	A3b	T5b	12.48	2.68	22	
	7/16 EHS	A3	T5b	12.48	2.85	23	
	3/8 EHS	A1	27	9.24	2.58	28	
	3/8 EHS	A1a	27a	9.24	1.95	21	
	3/8 EHS	A1b	27b	9.24	1.93	21	
	3/8 EHS	A1a	T2	9.24	1.57	17	
126.87	3/8 EHS	A1	T2	9.24	2.47	27	
	3/8 EHS	A1a	T2a	9.24	1.58	17	

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.0D + 1.0W Service 210°	198.97	3/8 EHS	A1b	T2a	9.24	1.56	17	
		3/8 EHS	A1	T2b	9.24	2.47	27	
		3/8 EHS	A1b	T2b	9.24	1.55	17	
		7/16 EHS	A2	T3	12.48	3.63	29	
		7/16 EHS	A2a	T3	12.48	1.92	15	
		7/16 EHS	A2b	T3a	12.48	1.92	15	
		7/16 EHS	A2a	T3a	12.48	1.92	15	
		7/16 EHS	A2b	T3b	12.48	1.91	15	
		7/16 EHS	A2	T3b	12.48	3.63	29	
		271.07	7/16 EHS	A2a	T4	12.48	1.84	15
		7/16 EHS	A2	T4	12.48	3.35	27	
		7/16 EHS	A2a	T4a	12.48	1.96	16	
		7/16 EHS	A2b	T4a	12.48	1.94	16	
		7/16 EHS	A2	T4b	12.48	3.34	27	
		7/16 EHS	A2b	T4b	12.48	1.83	15	
	331.07	7/16 EHS	A3	T5	12.48	3.13	25	
	7/16 EHS	A3a	T5	12.48	2.23	18		
	7/16 EHS	A3a	T5a	12.48	2.34	19		
	7/16 EHS	A3b	T5a	12.48	2.3	18		
	7/16 EHS	A3b	T5b	12.48	2.2	18		
	7/16 EHS	A3	T5b	12.48	3.13	25		
	67.12	3/8 EHS	A1	27	9.24	2.54	27	
	3/8 EHS	A1a	27a	9.24	2.13	23		
	3/8 EHS	A1b	27b	9.24	1.81	20		
	126.87	3/8 EHS	A1	T2	9.24	2.41	26	
	3/8 EHS	A1a	T2	9.24	1.81	20		
	3/8 EHS	A1b	T2a	9.24	1.38	15		
3/8 EHS	A1a	T2a	9.24	1.83	20			
3/8 EHS	A1	T2b	9.24	2.4	26			
3/8 EHS	A1b	T2b	9.24	1.37	15			
198.97	7/16 EHS	A2a	T3	12.48	2.4	19		
7/16 EHS	A2	T3	12.48	3.49	28			
7/16 EHS	A2b	T3a	12.48	1.53	12			
7/16 EHS	A2a	T3a	12.48	2.41	19			
7/16 EHS	A2	T3b	12.48	3.47	28			
7/16 EHS	A2b	T3b	12.48	1.53	12			
271.07	7/16 EHS	A2	T4	12.48	3.18	26		
7/16 EHS	A2a	T4	12.48	2.22	18			
7/16 EHS	A2b	T4a	12.48	1.57	13			
7/16 EHS	A2a	T4a	12.48	2.36	19			
7/16 EHS	A2b	T4b	12.48	1.51	12			
7/16 EHS	A2	T4b	12.48	3.23	26			
331.07	7/16 EHS	A3a	T5	12.48	2.47	20		
7/16 EHS	A3	T5	12.48	3.04	24			
7/16 EHS	A3a	T5a	12.48	2.58	21			
7/16 EHS	A3b	T5a	12.48	2.09	17			
7/16 EHS	A3	T5b	12.48	3.08	25			
7/16 EHS	A3b	T5b	12.48	2.04	16			
1.0D + 1.0W Service 240°	198.97	3/8 EHS	A1	27	9.24	2.42	26	
		3/8 EHS	A1a	27a	9.24	2.32	25	
		3/8 EHS	A1b	27b	9.24	1.76	19	
		3/8 EHS	A1a	T2	9.24	2.07	22	
		3/8 EHS	A1	T2	9.24	2.23	24	
		3/8 EHS	A1a	T2a	9.24	2.08	23	
		3/8 EHS	A1b	T2a	9.24	1.32	14	
		3/8 EHS	A1	T2b	9.24	2.23	24	
		3/8 EHS	A1b	T2b	9.24	1.31	14	
		7/16 EHS	A2	T3	12.48	3.09	25	
		7/16 EHS	A2a	T3	12.48	2.91	23	
		7/16 EHS	A2b	T3a	12.48	1.42	11	
		7/16 EHS	A2a	T3a	12.48	2.91	23	
		7/16 EHS	A2b	T3b	12.48	1.41	11	
		7/16 EHS	A2	T3b	12.48	3.08	25	
	271.07	7/16 EHS	A2	T4	12.48	2.81	22	
	7/16 EHS	A2a	T4	12.48	2.65	21		
	7/16 EHS	A2b	T4a	12.48	1.4	11		
	7/16 EHS	A2a	T4a	12.48	2.76	22		
	7/16 EHS	A2	T4b	12.48	2.91	23		

DETAILED CABLE FORCES

Load Case	Elev (ft)	Cable	Anchor Node	Tower Node	Allow Tension (kip)	Applied Tension (kip)	Use%	
1.0D + 1.0W Service 300°	331.07	7/16 EHS	A2b	T4b	12.48	1.39	11	
		7/16 EHS	A3	T5	12.48	2.85	23	
		7/16 EHS	A3a	T5	12.48	2.72	22	
		7/16 EHS	A3a	T5a	12.48	2.8	22	
		7/16 EHS	A3b	T5a	12.48	2.01	16	
		7/16 EHS	A3	T5b	12.48	2.92	23	
	67.12	7/16 EHS	A3b	T5b	12.48	2	16	
		3/8 EHS	A1	27	9.24	2.06	22	
	126.87	3/8 EHS	A1a	27a	9.24	2.5	27	
		3/8 EHS	A1b	27b	9.24	1.96	21	
		3/8 EHS	A1	T2	9.24	1.73	19	
		3/8 EHS	A1a	T2	9.24	2.34	25	
		3/8 EHS	A1a	T2a	9.24	2.34	25	
		3/8 EHS	A1b	T2a	9.24	1.6	17	
		3/8 EHS	A1b	T2b	9.24	1.6	17	
		3/8 EHS	A1	T2b	9.24	1.74	19	
	198.97	7/16 EHS	A2	T3	12.48	2.12	17	
		7/16 EHS	A2a	T3	12.48	3.48	28	
		7/16 EHS	A2a	T3a	12.48	3.48	28	
		7/16 EHS	A2b	T3a	12.48	1.98	16	
7/16 EHS		A2b	T3b	12.48	1.98	16		
7/16 EHS		A2	T3b	12.48	2.11	17		
271.07		7/16 EHS	A2	T4	12.48	2.02	16	
		7/16 EHS	A2a	T4	12.48	3.21	26	
	7/16 EHS	A2b	T4a	12.48	1.88	15		
	7/16 EHS	A2a	T4a	12.48	3.2	26		
	7/16 EHS	A2	T4b	12.48	2.13	17		
	7/16 EHS	A2b	T4b	12.48	1.98	16		
331.07	7/16 EHS	A3a	T5	12.48	3	24		
	7/16 EHS	A3	T5	12.48	2.36	19		
	7/16 EHS	A3b	T5a	12.48	2.22	18		
	7/16 EHS	A3a	T5a	12.48	3	24		
	7/16 EHS	A3	T5b	12.48	2.45	20		
	7/16 EHS	A3b	T5b	12.48	2.31	19		
	1.0D + 1.0W Service 330°	67.12	3/8 EHS	A1	27	9.24	1.93	21
			3/8 EHS	A1a	27a	9.24	2.46	27
126.87		3/8 EHS	A1b	27b	9.24	2.14	23	
		3/8 EHS	A1a	T2	9.24	2.28	25	
		3/8 EHS	A1	T2	9.24	1.56	17	
		3/8 EHS	A1b	T2a	9.24	1.85	20	
		3/8 EHS	A1a	T2a	9.24	2.3	25	
		3/8 EHS	A1b	T2b	9.24	1.85	20	
198.97		3/8 EHS	A1	T2b	9.24	1.56	17	
		7/16 EHS	A2a	T3	12.48	3.33	27	
	7/16 EHS	A2	T3	12.48	1.73	14		
	7/16 EHS	A2a	T3a	12.48	3.36	27		
	7/16 EHS	A2b	T3a	12.48	2.48	20		
	7/16 EHS	A2	T3b	12.48	1.72	14		
	7/16 EHS	A2b	T3b	12.48	2.48	20		
	271.07	7/16 EHS	A2a	T4	12.48	3.1	25	
7/16 EHS		A2	T4	12.48	1.7	14		
7/16 EHS		A2b	T4a	12.48	2.27	18		
7/16 EHS		A2a	T4a	12.48	3.04	24		
7/16 EHS		A2	T4b	12.48	1.77	14		
7/16 EHS		A2b	T4b	12.48	2.4	19		
331.07		7/16 EHS	A3	T5	12.48	2.18	17	
		7/16 EHS	A3a	T5	12.48	2.96	24	
	7/16 EHS	A3b	T5a	12.48	2.46	20		
	7/16 EHS	A3a	T5a	12.48	2.92	23		
	7/16 EHS	A3	T5b	12.48	2.23	18		
	7/16 EHS	A3b	T5b	12.48	2.56	20		

MAXIMUM CABLE FORCES SUMMARY

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Allowed Tension (kip)	Applied Tension (kip)	Use (%)
1.2D + 1.0Di + 1.0Wi 180°	67.12	3/8 EHS	A1	T7	9.24	3.57	39
1.2D + 1.0W 180°	126.87	3/8 EHS	A1	T2	9.24	4.16	45
1.2D + 1.0W 180°	198.97	7/16 EHS	A2	T3	12.48	8.09	65
1.2D + 1.0W 180°	271.07	7/16 EHS	A2	T4	12.48	7.58	61
1.2D + 1.0Di + 1.0Wi 180°	331.07	7/16 EHS	A3	T5	12.48	7.15	57

MAXIMUM TORQUE ARM STRESS SUMMARY

Load Case	Elevation (ft)	Member	Type	Compression %	Tension %
1.2D + 1.0W Normal	67.30	PL 3 x 0.375	Horiz	0	6
1.2D + 1.0Di + 1.0Wi 120°	126.80	3X3X0.25	Kicker	23	0
1.2D + 1.0W 60°	126.80	3X3X0.25	Horiz	0	10
1.2D + 1.0W 90°	197.80	3X3X0.25	Horiz	0	23
1.2D + 1.0W 210°	197.80	3X3X0.25	Kicker	40	0
1.2D + 1.0W 210°	271.80	3X3X0.25	Kicker	40	0
1.2D + 1.0W 90°	271.80	3X3X0.25	Horiz	0	16
1.2D + 1.0Di + 1.0Wi 180°	331.80	3X3X0.25	Kicker	30	0
1.2D + 1.0Di + 1.0Wi 60°	331.80	3X3X0.25	Horiz	0	13

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0W Normal 117 mph wind with no ice	71.07	0.1766	-0.2970	0.2793	0.4077
1.2D + 1.0W Normal 117 mph wind with no ice	127.00	0.4212	0.0025	0.5056	0.5056
1.2D + 1.0W Normal 117 mph wind with no ice	171.07	0.9111	0.0274	0.5661	0.5668
1.2D + 1.0W Normal 117 mph wind with no ice	182.92	1.022	0.0198	0.5124	0.5128
1.2D + 1.0W Normal 117 mph wind with no ice	198.97	1.1624	0.0291	0.5510	0.551
1.2D + 1.0W Normal 117 mph wind with no ice	211.07	1.2998	0.0570	0.6353	0.6379
1.2D + 1.0W Normal 117 mph wind with no ice	215.02	1.3397	0.0262	0.6004	0.6008
1.2D + 1.0W Normal 117 mph wind with no ice	222.92	1.4059	0.0122	0.3807	0.3809
1.2D + 1.0W Normal 117 mph wind with no ice	251.07	1.4442	0.0928	0.2394	0.2568
1.2D + 1.0W Normal 117 mph wind with no ice	271.07	1.3053	-0.0491	0.4605	0.4631
1.2D + 1.0W Normal 117 mph wind with no ice	282.92	1.2071	-0.0537	0.5098	0.5126
1.2D + 1.0W Normal 117 mph wind with no ice	295.02	1.0902	-0.0568	0.6068	0.6093
1.2D + 1.0W Normal 117 mph wind with no ice	302.92	1.0016	-0.0576	0.6807	0.6831
1.2D + 1.0W Normal 117 mph wind with no ice	306.87	0.9532	-0.0547	0.7273	0.7292
1.2D + 1.0W Normal 117 mph wind with no ice	331.07	0.6141	-0.0450	0.8254	0.8265
1.2D + 1.0W 60° 117 mph wind with no ice	71.07	0.1811	-0.0413	0.2523	0.2556
1.2D + 1.0W 60° 117 mph wind with no ice	127.00	0.3248	0.0367	0.2981	0.2994
1.2D + 1.0W 60° 117 mph wind with no ice	171.07	0.6217	-0.0013	0.3446	0.3447
1.2D + 1.0W 60° 117 mph wind with no ice	182.92	0.6915	0.0027	0.3149	0.3149
1.2D + 1.0W 60° 117 mph wind with no ice	198.97	0.7874	0.0168	0.4458	0.4458
1.2D + 1.0W 60° 117 mph wind with no ice	211.07	0.8998	-0.0057	0.5797	0.5797
1.2D + 1.0W 60° 117 mph wind with no ice	215.02	0.9376	-0.0075	0.5267	0.5267
1.2D + 1.0W 60° 117 mph wind with no ice	222.92	1.0047	-0.0081	0.4030	0.403
1.2D + 1.0W 60° 117 mph wind with no ice	251.07	1.0865	-0.0160	0.0638	0.0658
1.2D + 1.0W 60° 117 mph wind with no ice	271.07	1.0245	-0.0276	0.1414	0.144
1.2D + 1.0W 60° 117 mph wind with no ice	282.92	0.9997	-0.0304	0.1197	0.1236
1.2D + 1.0W 60° 117 mph wind with no ice	295.02	0.9724	-0.0344	0.1521	0.1554
1.2D + 1.0W 60° 117 mph wind with no ice	302.92	0.9487	-0.0358	0.1943	0.1975
1.2D + 1.0W 60° 117 mph wind with no ice	306.87	0.9343	-0.0324	0.2232	0.2256
1.2D + 1.0W 60° 117 mph wind with no ice	331.07	0.8171	-0.0185	0.2910	0.2916
1.2D + 1.0W 90° 117 mph wind with no ice	71.07	0.1835	0.2163	0.2863	0.3585
1.2D + 1.0W 90° 117 mph wind with no ice	127.00	0.3975	0.0461	0.4513	0.4533
1.2D + 1.0W 90° 117 mph wind with no ice	171.07	0.8243	0.2235	0.5102	0.557
1.2D + 1.0W 90° 117 mph wind with no ice	182.92	0.9265	0.0796	0.4383	0.4455
1.2D + 1.0W 90° 117 mph wind with no ice	198.97	1.046	0.0743	0.5066	0.5112
1.2D + 1.0W 90° 117 mph wind with no ice	211.07	1.1684	0.1225	0.6131	0.6243
1.2D + 1.0W 90° 117 mph wind with no ice	215.02	1.2055	0.1389	0.5258	0.5425
1.2D + 1.0W 90° 117 mph wind with no ice	222.92	1.2696	0.1811	0.4149	0.4518
1.2D + 1.0W 90° 117 mph wind with no ice	251.07	1.3112	0.2645	0.2311	0.3489
1.2D + 1.0W 90° 117 mph wind with no ice	271.07	1.19	0.1884	0.3940	0.4338

## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0W 90° 117 mph wind with no ice	282.92	1.1083	0.1848	0.4262	0.4645
1.2D + 1.0W 90° 117 mph wind with no ice	295.02	1.0326	0.1918	0.4982	0.5334
1.2D + 1.0W 90° 117 mph wind with no ice	302.92	0.9614	0.1963	0.5549	0.5886
1.2D + 1.0W 90° 117 mph wind with no ice	306.87	0.9365	0.2021	0.5939	0.6274
1.2D + 1.0W 90° 117 mph wind with no ice	331.07	0.7074	0.2274	0.6765	0.7131
1.2D + 1.0W 120° 117 mph wind with no ice	71.07	0.1991	0.1352	0.2944	0.324
1.2D + 1.0W 120° 117 mph wind with no ice	127.00	0.4744	-0.0034	0.5439	0.5439
1.2D + 1.0W 120° 117 mph wind with no ice	171.07	1.0075	-0.2074	0.5952	0.6303
1.2D + 1.0W 120° 117 mph wind with no ice	182.92	1.1185	-0.0653	0.5525	0.5563
1.2D + 1.0W 120° 117 mph wind with no ice	198.97	1.2594	-0.0165	0.5605	0.5606
1.2D + 1.0W 120° 117 mph wind with no ice	211.07	1.3892	-0.0147	0.6261	0.6262
1.2D + 1.0W 120° 117 mph wind with no ice	215.02	1.4296	-0.0069	0.5653	0.5653
1.2D + 1.0W 120° 117 mph wind with no ice	222.92	1.4958	0.0956	0.3866	0.3982
1.2D + 1.0W 120° 117 mph wind with no ice	251.07	1.5208	0.1474	0.2715	0.3089
1.2D + 1.0W 120° 117 mph wind with no ice	271.07	1.3662	0.0625	0.5136	0.5165
1.2D + 1.0W 120° 117 mph wind with no ice	282.92	1.2547	0.0563	0.5717	0.5744
1.2D + 1.0W 120° 117 mph wind with no ice	295.02	1.1257	0.0528	0.6745	0.6766
1.2D + 1.0W 120° 117 mph wind with no ice	302.92	1.0261	0.0498	0.7516	0.7532
1.2D + 1.0W 120° 117 mph wind with no ice	306.87	0.9741	0.0488	0.8010	0.8025
1.2D + 1.0W 120° 117 mph wind with no ice	331.07	0.6021	0.0485	0.9095	0.9108
1.2D + 1.0W 180° 117 mph wind with no ice	71.07	0.221	0.0766	0.2969	0.3066
1.2D + 1.0W 180° 117 mph wind with no ice	127.00	0.4193	0.0049	0.3849	0.385
1.2D + 1.0W 180° 117 mph wind with no ice	171.07	0.7783	-0.1181	0.3938	0.4112
1.2D + 1.0W 180° 117 mph wind with no ice	182.92	0.8507	-0.0443	0.3260	0.3287
1.2D + 1.0W 180° 117 mph wind with no ice	198.97	0.9546	-0.0405	0.4794	0.4801
1.2D + 1.0W 180° 117 mph wind with no ice	211.07	1.0749	-0.0213	0.6207	0.621
1.2D + 1.0W 180° 117 mph wind with no ice	215.02	1.1153	-0.0159	0.5666	0.5668
1.2D + 1.0W 180° 117 mph wind with no ice	222.92	1.1878	-0.0029	0.4649	0.4649
1.2D + 1.0W 180° 117 mph wind with no ice	251.07	1.2845	0.0217	0.0536	0.0577
1.2D + 1.0W 180° 117 mph wind with no ice	271.07	1.2221	0.0401	0.1502	0.1555
1.2D + 1.0W 180° 117 mph wind with no ice	282.92	1.1949	0.0444	0.1336	0.1408
1.2D + 1.0W 180° 117 mph wind with no ice	295.02	1.1641	0.0507	0.1732	0.1798
1.2D + 1.0W 180° 117 mph wind with no ice	302.92	1.1371	0.0537	0.2209	0.2274
1.2D + 1.0W 180° 117 mph wind with no ice	306.87	1.1208	0.0512	0.2526	0.2578
1.2D + 1.0W 180° 117 mph wind with no ice	331.07	0.9861	0.0404	0.3399	0.3422
1.2D + 1.0W 210° 117 mph wind with no ice	71.07	0.2199	0.3061	0.3303	0.4499
1.2D + 1.0W 210° 117 mph wind with no ice	127.00	0.4701	-0.0034	0.4943	0.4944
1.2D + 1.0W 210° 117 mph wind with no ice	171.07	0.9445	0.2356	0.5349	0.5845
1.2D + 1.0W 210° 117 mph wind with no ice	182.92	1.052	0.0769	0.4757	0.4818
1.2D + 1.0W 210° 117 mph wind with no ice	198.97	1.18	0.0596	0.5355	0.5366
1.2D + 1.0W 210° 117 mph wind with no ice	211.07	1.31	0.0273	0.6442	0.6446
1.2D + 1.0W 210° 117 mph wind with no ice	215.02	1.3498	0.0435	0.5554	0.5566
1.2D + 1.0W 210° 117 mph wind with no ice	222.92	1.4184	0.0891	0.4407	0.4492
1.2D + 1.0W 210° 117 mph wind with no ice	251.07	1.4724	0.3034	0.2414	0.3854
1.2D + 1.0W 210° 117 mph wind with no ice	271.07	1.3447	0.2270	0.4234	0.4798
1.2D + 1.0W 210° 117 mph wind with no ice	282.92	1.2677	0.2398	0.4641	0.5224
1.2D + 1.0W 210° 117 mph wind with no ice	295.02	1.1801	0.2557	0.5473	0.6035
1.2D + 1.0W 210° 117 mph wind with no ice	302.92	1.1148	0.2657	0.6061	0.6618
1.2D + 1.0W 210° 117 mph wind with no ice	306.87	1.0793	0.2666	0.6459	0.6984
1.2D + 1.0W 210° 117 mph wind with no ice	331.07	0.8388	0.2711	0.7392	0.7864
1.2D + 1.0W 240° 117 mph wind with no ice	71.07	0.2065	0.1085	0.3245	0.3421
1.2D + 1.0W 240° 117 mph wind with no ice	127.00	0.4802	-0.0102	0.5339	0.534
1.2D + 1.0W 240° 117 mph wind with no ice	171.07	1.0014	0.0077	0.5917	0.5917
1.2D + 1.0W 240° 117 mph wind with no ice	182.92	1.1185	-0.0041	0.5367	0.5367
1.2D + 1.0W 240° 117 mph wind with no ice	198.97	1.2639	-0.0234	0.5711	0.5712
1.2D + 1.0W 240° 117 mph wind with no ice	211.07	1.3968	-0.0713	0.6551	0.6589
1.2D + 1.0W 240° 117 mph wind with no ice	215.02	1.439	-0.1269	0.5848	0.5984
1.2D + 1.0W 240° 117 mph wind with no ice	222.92	1.5065	-0.2220	0.3608	0.4235
1.2D + 1.0W 240° 117 mph wind with no ice	251.07	1.5239	-0.0605	0.3082	0.3137
1.2D + 1.0W 240° 117 mph wind with no ice	271.07	1.3655	0.0068	0.5294	0.5294
1.2D + 1.0W 240° 117 mph wind with no ice	282.92	1.2514	0.0127	0.5907	0.5908
1.2D + 1.0W 240° 117 mph wind with no ice	295.02	1.1164	0.0178	0.6989	0.6991
1.2D + 1.0W 240° 117 mph wind with no ice	302.92	1.0147	0.0201	0.7786	0.7789
1.2D + 1.0W 240° 117 mph wind with no ice	306.87	0.9594	0.0189	0.8283	0.8285
1.2D + 1.0W 240° 117 mph wind with no ice	331.07	0.5744	0.0129	0.9394	0.9394
1.2D + 1.0W 300° 117 mph wind with no ice	71.07	0.1973	-0.2575	0.2344	0.3479
1.2D + 1.0W 300° 117 mph wind with no ice	127.00	0.3387	0.0266	0.3196	0.3202
1.2D + 1.0W 300° 117 mph wind with no ice	171.07	0.6356	-0.0349	0.3409	0.3427

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0W 300° 117 mph wind with no ice	182.92	0.7025	-0.0302	0.2784	0.2798
1.2D + 1.0W 300° 117 mph wind with no ice	198.97	0.7956	-0.0373	0.4408	0.4414
1.2D + 1.0W 300° 117 mph wind with no ice	211.07	0.9074	-0.0266	0.5779	0.5785
1.2D + 1.0W 300° 117 mph wind with no ice	215.02	0.9452	-0.0257	0.5268	0.5273
1.2D + 1.0W 300° 117 mph wind with no ice	222.92	1.0127	-0.0208	0.4052	0.4057
1.2D + 1.0W 300° 117 mph wind with no ice	251.07	1.0978	-0.0203	0.0521	0.0558
1.2D + 1.0W 300° 117 mph wind with no ice	271.07	1.0405	-0.0247	0.1232	0.1255
1.2D + 1.0W 300° 117 mph wind with no ice	282.92	1.019	-0.0195	0.1001	0.102
1.2D + 1.0W 300° 117 mph wind with no ice	295.02	0.9971	-0.0215	0.1275	0.129
1.2D + 1.0W 300° 117 mph wind with no ice	302.92	0.976	-0.0211	0.1686	0.1699
1.2D + 1.0W 300° 117 mph wind with no ice	306.87	0.9642	-0.0225	0.1957	0.1967
1.2D + 1.0W 300° 117 mph wind with no ice	331.07	0.8575	-0.0252	0.2687	0.2697
1.2D + 1.0W 330° 117 mph wind with no ice	71.07	0.185	0.1572	0.2907	0.3302
1.2D + 1.0W 330° 117 mph wind with no ice	127.00	0.3943	0.0176	0.4396	0.4399
1.2D + 1.0W 330° 117 mph wind with no ice	171.07	0.8209	0.2457	0.4545	0.5166
1.2D + 1.0W 330° 117 mph wind with no ice	182.92	0.9087	0.0866	0.4338	0.4423
1.2D + 1.0W 330° 117 mph wind with no ice	198.97	1.0269	0.0680	0.5062	0.5079
1.2D + 1.0W 330° 117 mph wind with no ice	211.07	1.1511	0.0315	0.6193	0.6199
1.2D + 1.0W 330° 117 mph wind with no ice	215.02	1.1892	0.0443	0.5351	0.5369
1.2D + 1.0W 330° 117 mph wind with no ice	222.92	1.2554	0.0828	0.4257	0.4332
1.2D + 1.0W 330° 117 mph wind with no ice	251.07	1.3081	0.1701	0.2089	0.2676
1.2D + 1.0W 330° 117 mph wind with no ice	271.07	1.1961	0.1365	0.3587	0.3821
1.2D + 1.0W 330° 117 mph wind with no ice	282.92	1.1244	0.1317	0.3917	0.4133
1.2D + 1.0W 330° 117 mph wind with no ice	295.02	1.0568	0.1400	0.4617	0.482
1.2D + 1.0W 330° 117 mph wind with no ice	302.92	0.9946	0.1444	0.5176	0.5373
1.2D + 1.0W 330° 117 mph wind with no ice	306.87	0.9711	0.1500	0.5533	0.5733
1.2D + 1.0W 330° 117 mph wind with no ice	331.07	0.7637	0.1746	0.6286	0.6518
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	71.07	0.06	-0.0312	0.1109	0.1152
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	127.00	0.0548	0.0074	0.0645	0.0649
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	171.07	0.1194	-0.0125	0.0639	0.0651
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	182.92	0.104	0.0307	0.1178	0.1217
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	198.97	0.086	0.0067	0.0326	0.0328
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	211.07	0.0862	-0.0588	0.0625	0.0858
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	215.02	0.0882	-0.1108	0.0528	0.1217
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	222.92	0.0813	-0.1094	0.1359	0.1715
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	251.07	0.018	-0.0088	0.2839	0.284
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	271.07	0.1312	-0.0119	0.3338	0.334
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	282.92	0.1985	-0.0113	0.3315	0.3317
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	295.02	0.2708	-0.0127	0.3511	0.3513
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	302.92	0.3198	-0.0132	0.3715	0.3718
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	306.87	0.3466	-0.0126	0.3843	0.3845
1.2D + 1.0Di + 1.0Wi Normal 50 mph wind with 1" radial ice	331.07	0.5204	-0.0114	0.4214	0.4216
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	71.07	0.0758	-0.0520	0.1879	0.1948
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	127.00	0.1218	0.0421	0.2045	0.2088
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	171.07	0.2449	0.3021	0.1491	0.3369
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	182.92	0.2678	-0.0673	0.0734	0.0992
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	198.97	0.2873	-0.0384	0.1213	0.1257
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	211.07	0.3204	-0.0337	0.1977	0.2006
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	215.02	0.3328	-0.0319	0.1719	0.1745
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	222.92	0.3542	-0.0261	0.1354	0.1373
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	251.07	0.3582	-0.0127	0.0791	0.0799
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	271.07	0.3174	-0.0093	0.1279	0.1282
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	282.92	0.2919	-0.0090	0.1304	0.1307
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	295.02	0.2637	-0.0087	0.1528	0.1531
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	302.92	0.2417	-0.0081	0.1751	0.1753
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	306.87	0.23	-0.0066	0.1890	0.1891
1.2D + 1.0Di + 1.0Wi 60° 50 mph wind with 1" radial ice	331.07	0.1435	-0.0013	0.2263	0.2263
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	71.07	0.0818	-0.0651	0.1413	0.1553
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	127.00	0.109	0.0203	0.0962	0.0979
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	171.07	0.2059	0.0935	0.0168	0.095
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	182.92	0.2169	0.0263	0.1338	0.1363
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	198.97	0.2246	0.0611	0.0926	0.1107
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	211.07	0.2466	0.1075	0.1747	0.2041
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	215.02	0.2564	0.1440	0.1385	0.1968
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	222.92	0.269	0.1480	0.1200	0.1894
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	251.07	0.2486	0.1326	0.1987	0.2389
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	271.07	0.21	0.1257	0.2483	0.2777
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	282.92	0.1948	0.1231	0.2485	0.2773



## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	295.02	0.2046	0.1238	0.2685	0.2954
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	302.92	0.2083	0.1232	0.2907	0.3157
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	306.87	0.2223	0.1246	0.3038	0.3282
1.2D + 1.0Di + 1.0Wi 90° 50 mph wind with 1" radial ice	331.07	0.3072	0.1284	0.3482	0.3708
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	71.07	0.1009	-0.2086	0.1439	0.2528
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	127.00	0.1346	-0.0389	0.0891	0.0972
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	171.07	0.2083	0.2098	0.0795	0.2244
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	182.92	0.2148	0.1519	0.1768	0.2331
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	198.97	0.1972	0.0671	0.0294	0.073
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	211.07	0.199	0.1273	0.0773	0.149
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	215.02	0.2009	0.1629	0.0115	0.1633
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	222.92	0.1981	0.0764	0.0980	0.1232
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	251.07	0.1211	-0.0159	0.2715	0.272
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	271.07	0.0737	-0.0110	0.3212	0.3213
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	282.92	0.1065	-0.0075	0.3164	0.3165
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	295.02	0.1633	-0.0060	0.3339	0.3339
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	302.92	0.2068	-0.0045	0.3560	0.356
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	306.87	0.2304	-0.0040	0.3690	0.369
1.2D + 1.0Di + 1.0Wi 120° 50 mph wind with 1" radial ice	331.07	0.3947	-0.0033	0.4170	0.417
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	71.07	0.1168	-0.2411	0.0584	0.2477
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	127.00	0.2011	-0.0150	0.0954	0.0962
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	171.07	0.3352	0.0213	0.1979	0.199
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	182.92	0.3686	-0.0447	0.1879	0.193
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	198.97	0.3958	0.0214	0.1211	0.1222
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	211.07	0.4312	-0.0243	0.2228	0.2234
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	215.02	0.4448	-0.0292	0.1917	0.1939
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	222.92	0.4691	-0.0235	0.1568	0.1581
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	251.07	0.4833	-0.0066	0.0601	0.0603
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	271.07	0.4468	0.0027	0.1157	0.1157
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	282.92	0.4235	0.0041	0.1160	0.1161
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	295.02	0.3974	0.0072	0.1406	0.1407
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	302.92	0.3764	0.0090	0.1667	0.1669
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	306.87	0.3646	0.0088	0.1820	0.1823
1.2D + 1.0Di + 1.0Wi 180° 50 mph wind with 1" radial ice	331.07	0.2708	0.0083	0.2405	0.2407
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	71.07	0.1179	0.1467	0.1105	0.1837
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	127.00	0.1778	0.0123	0.0639	0.065
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	171.07	0.2822	-0.0384	0.1461	0.1511
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	182.92	0.3026	-0.0507	0.1945	0.201
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	198.97	0.3166	0.0236	0.1050	0.1075
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	211.07	0.3444	0.0716	0.1937	0.206
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	215.02	0.3565	0.1174	0.1701	0.2054
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	222.92	0.3762	0.1600	0.1462	0.2168
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	251.07	0.3781	0.1451	0.1857	0.2356
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	271.07	0.3499	0.1381	0.2317	0.2693
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	282.92	0.3402	0.1392	0.2287	0.2677
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	295.02	0.3364	0.1408	0.2487	0.2853
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	302.92	0.3349	0.1415	0.2713	0.3059
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	306.87	0.3377	0.1405	0.2850	0.3178
1.2D + 1.0Di + 1.0Wi 210° 50 mph wind with 1" radial ice	331.07	0.3667	0.1375	0.3382	0.3645
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	71.07	0.1136	0.3180	0.1481	0.3501
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	127.00	0.1453	-0.0114	0.0658	0.0668
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	171.07	0.2244	-0.1695	0.1094	0.2017
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	182.92	0.2163	-0.0804	0.1407	0.1618
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	198.97	0.1986	-0.0142	0.0298	0.0328
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	211.07	0.1998	-0.0724	0.0841	0.111
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	215.02	0.2018	-0.1069	0.0089	0.1073
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	222.92	0.1992	-0.0197	0.0933	0.0952
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	251.07	0.1249	0.0223	0.2528	0.2538
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	271.07	0.0617	0.0192	0.2960	0.2966
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	282.92	0.0809	0.0175	0.2863	0.2869
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	295.02	0.1307	0.0174	0.3018	0.3023
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	302.92	0.1689	0.0168	0.3228	0.3233
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	306.87	0.191	0.0154	0.3357	0.336
1.2D + 1.0Di + 1.0Wi 240° 50 mph wind with 1" radial ice	331.07	0.3422	0.0115	0.3853	0.3854
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	71.07	0.0978	-0.2598	0.1653	0.3076
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	127.00	0.135	-0.0664	0.1827	0.1944
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	171.07	0.245	-0.2491	0.1354	0.2835
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	182.92	0.2736	0.0983	0.0697	0.1201

## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	198.97	0.2928	0.0604	0.1220	0.1351
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	211.07	0.3262	0.0142	0.2157	0.2162
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	215.02	0.3391	0.0081	0.1792	0.1792
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	222.92	0.3616	0.0038	0.1440	0.144
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	251.07	0.371	-0.0071	0.0675	0.0678
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	271.07	0.3354	-0.0105	0.1137	0.1142
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	282.92	0.3136	-0.0094	0.1153	0.1157
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	295.02	0.2893	-0.0113	0.1369	0.1373
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	302.92	0.2701	-0.0115	0.1587	0.1592
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	306.87	0.2596	-0.0127	0.1727	0.1731
1.2D + 1.0Di + 1.0Wi 300° 50 mph wind with 1" radial ice	331.07	0.1806	-0.0151	0.2148	0.2153
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	71.07	0.0681	0.0519	0.1853	0.1923
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	127.00	0.1056	-0.0234	0.1535	0.1552
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	171.07	0.1895	0.1558	0.0694	0.1706
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	182.92	0.1927	0.0260	0.1734	0.1752
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	198.97	0.2147	0.0693	0.1032	0.1239
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	211.07	0.243	0.1127	0.1871	0.2173
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	215.02	0.2546	0.1482	0.1537	0.2106
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	222.92	0.2731	0.1517	0.1381	0.204
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	251.07	0.2853	0.1285	0.2099	0.2461
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	271.07	0.2872	0.1177	0.2600	0.2846
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	282.92	0.3015	0.1149	0.2640	0.2879
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	295.02	0.3253	0.1140	0.2860	0.3077
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	302.92	0.3458	0.1128	0.3064	0.3265
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	306.87	0.3575	0.1131	0.3195	0.3388
1.2D + 1.0Di + 1.0Wi 330° 50 mph wind with 1" radial ice	331.07	0.4516	0.1149	0.3558	0.3735
1.2D + 1.0Ev + 1.0Eh Normal Seismic	71.07	0.0078	0.0000	0.0051	0.0051
1.2D + 1.0Ev + 1.0Eh Normal Seismic	127.00	0.0089	0.0001	0.0102	0.0102
1.2D + 1.0Ev + 1.0Eh Normal Seismic	171.07	0.0026	0.0000	0.0070	0.007
1.2D + 1.0Ev + 1.0Eh Normal Seismic	182.92	0.0018	0.0000	0.0087	0.0087
1.2D + 1.0Ev + 1.0Eh Normal Seismic	198.97	0.002	0.0004	0.0126	0.0126
1.2D + 1.0Ev + 1.0Eh Normal Seismic	211.07	0.0047	0.0001	0.0132	0.0132
1.2D + 1.0Ev + 1.0Eh Normal Seismic	215.02	0.0056	0.0001	0.0114	0.0114
1.2D + 1.0Ev + 1.0Eh Normal Seismic	222.92	0.0068	0.0001	0.0076	0.0076
1.2D + 1.0Ev + 1.0Eh Normal Seismic	251.07	0.0072	0.0000	0.0043	0.0043
1.2D + 1.0Ev + 1.0Eh Normal Seismic	271.07	0.0057	0.0002	0.0043	0.0043
1.2D + 1.0Ev + 1.0Eh Normal Seismic	282.92	0.0053	0.0000	0.0040	0.004
1.2D + 1.0Ev + 1.0Eh Normal Seismic	295.02	0.0048	0.0000	0.0051	0.0051
1.2D + 1.0Ev + 1.0Eh Normal Seismic	302.92	0.0046	0.0000	0.0055	0.0055
1.2D + 1.0Ev + 1.0Eh Normal Seismic	306.87	0.0045	0.0000	0.0061	0.0061
1.2D + 1.0Ev + 1.0Eh Normal Seismic	331.07	0.0045	0.0002	0.0029	0.0029
1.2D + 1.0Ev + 1.0Eh 60° Seismic	71.07	0.0099	0.0001	0.0076	0.0076
1.2D + 1.0Ev + 1.0Eh 60° Seismic	127.00	0.0126	0.0002	0.0120	0.012
1.2D + 1.0Ev + 1.0Eh 60° Seismic	171.07	0.0118	0.0001	0.0098	0.0098
1.2D + 1.0Ev + 1.0Eh 60° Seismic	182.92	0.0126	0.0002	0.0115	0.0115
1.2D + 1.0Ev + 1.0Eh 60° Seismic	198.97	0.0137	0.0005	0.0150	0.015
1.2D + 1.0Ev + 1.0Eh 60° Seismic	211.07	0.0158	0.0002	0.0155	0.0155
1.2D + 1.0Ev + 1.0Eh 60° Seismic	215.02	0.0165	0.0002	0.0141	0.0141
1.2D + 1.0Ev + 1.0Eh 60° Seismic	222.92	0.0177	0.0003	0.0101	0.0101
1.2D + 1.0Ev + 1.0Eh 60° Seismic	251.07	0.0184	0.0003	0.0046	0.0046
1.2D + 1.0Ev + 1.0Eh 60° Seismic	271.07	0.0166	0.0004	0.0061	0.0061
1.2D + 1.0Ev + 1.0Eh 60° Seismic	282.92	0.0147	0.0002	0.0057	0.0057
1.2D + 1.0Ev + 1.0Eh 60° Seismic	295.02	0.0149	0.0003	0.0069	0.0069
1.2D + 1.0Ev + 1.0Eh 60° Seismic	302.92	0.0132	0.0002	0.0078	0.0078
1.2D + 1.0Ev + 1.0Eh 60° Seismic	306.87	0.014	0.0002	0.0084	0.0084
1.2D + 1.0Ev + 1.0Eh 60° Seismic	331.07	0.0121	0.0004	0.0060	0.006
1.2D + 1.0Ev + 1.0Eh 90° Seismic	71.07	0.0108	0.0001	0.0090	0.009
1.2D + 1.0Ev + 1.0Eh 90° Seismic	127.00	0.0154	0.0002	0.0121	0.0121
1.2D + 1.0Ev + 1.0Eh 90° Seismic	171.07	0.0179	0.0001	0.0106	0.0106
1.2D + 1.0Ev + 1.0Eh 90° Seismic	182.92	0.0195	0.0002	0.0116	0.0116
1.2D + 1.0Ev + 1.0Eh 90° Seismic	198.97	0.0211	0.0004	0.0147	0.0147
1.2D + 1.0Ev + 1.0Eh 90° Seismic	211.07	0.0234	0.0002	0.0158	0.0158
1.2D + 1.0Ev + 1.0Eh 90° Seismic	215.02	0.0242	0.0003	0.0144	0.0144
1.2D + 1.0Ev + 1.0Eh 90° Seismic	222.92	0.0255	0.0003	0.0105	0.0105
1.2D + 1.0Ev + 1.0Eh 90° Seismic	251.07	0.0267	0.0004	0.0043	0.0043
1.2D + 1.0Ev + 1.0Eh 90° Seismic	271.07	0.025	0.0005	0.0062	0.0062
1.2D + 1.0Ev + 1.0Eh 90° Seismic	282.92	0.0234	0.0003	0.0056	0.0057
1.2D + 1.0Ev + 1.0Eh 90° Seismic	295.02	0.0239	0.0003	0.0069	0.0069

## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Ev + 1.0Eh 90° Seismic	302.92	0.0225	0.0003	0.0077	0.0077
1.2D + 1.0Ev + 1.0Eh 90° Seismic	306.87	0.0233	0.0003	0.0083	0.0083
1.2D + 1.0Ev + 1.0Eh 90° Seismic	331.07	0.0216	0.0004	0.0067	0.0067
1.2D + 1.0Ev + 1.0Eh 120° Seismic	71.07	0.0117	0.0001	0.0103	0.0103
1.2D + 1.0Ev + 1.0Eh 120° Seismic	127.00	0.0181	0.0002	0.0117	0.0117
1.2D + 1.0Ev + 1.0Eh 120° Seismic	171.07	0.0234	0.0001	0.0114	0.0114
1.2D + 1.0Ev + 1.0Eh 120° Seismic	182.92	0.0257	0.0002	0.0114	0.0114
1.2D + 1.0Ev + 1.0Eh 120° Seismic	198.97	0.0279	0.0006	0.0142	0.0142
1.2D + 1.0Ev + 1.0Eh 120° Seismic	211.07	0.0308	0.0002	0.0163	0.0163
1.2D + 1.0Ev + 1.0Eh 120° Seismic	215.02	0.0317	0.0003	0.0148	0.0148
1.2D + 1.0Ev + 1.0Eh 120° Seismic	222.92	0.0333	0.0003	0.0112	0.0112
1.2D + 1.0Ev + 1.0Eh 120° Seismic	251.07	0.0351	0.0004	0.0037	0.0037
1.2D + 1.0Ev + 1.0Eh 120° Seismic	271.07	0.0336	0.0006	0.0057	0.0058
1.2D + 1.0Ev + 1.0Eh 120° Seismic	282.92	0.0321	0.0003	0.0052	0.0052
1.2D + 1.0Ev + 1.0Eh 120° Seismic	295.02	0.0329	0.0003	0.0063	0.0063
1.2D + 1.0Ev + 1.0Eh 120° Seismic	302.92	0.0316	0.0003	0.0071	0.0071
1.2D + 1.0Ev + 1.0Eh 120° Seismic	306.87	0.0325	0.0003	0.0076	0.0076
1.2D + 1.0Ev + 1.0Eh 120° Seismic	331.07	0.0306	0.0004	0.0071	0.0072
1.2D + 1.0Ev + 1.0Eh 180° Seismic	71.07	0.0126	0.0000	0.0118	0.0118
1.2D + 1.0Ev + 1.0Eh 180° Seismic	127.00	0.0209	0.0002	0.0121	0.0121
1.2D + 1.0Ev + 1.0Eh 180° Seismic	171.07	0.0286	0.0000	0.0120	0.012
1.2D + 1.0Ev + 1.0Eh 180° Seismic	182.92	0.0317	0.0000	0.0106	0.0106
1.2D + 1.0Ev + 1.0Eh 180° Seismic	198.97	0.0344	0.0005	0.0130	0.013
1.2D + 1.0Ev + 1.0Eh 180° Seismic	211.07	0.0378	0.0000	0.0164	0.0164
1.2D + 1.0Ev + 1.0Eh 180° Seismic	215.02	0.0389	0.0001	0.0157	0.0157
1.2D + 1.0Ev + 1.0Eh 180° Seismic	222.92	0.0408	0.0001	0.0127	0.0127
1.2D + 1.0Ev + 1.0Eh 180° Seismic	251.07	0.0435	0.0001	0.0019	0.0019
1.2D + 1.0Ev + 1.0Eh 180° Seismic	271.07	0.0423	0.0003	0.0038	0.0038
1.2D + 1.0Ev + 1.0Eh 180° Seismic	282.92	0.0413	0.0000	0.0036	0.0036
1.2D + 1.0Ev + 1.0Eh 180° Seismic	295.02	0.0424	0.0001	0.0039	0.0039
1.2D + 1.0Ev + 1.0Eh 180° Seismic	302.92	0.0415	0.0001	0.0042	0.0042
1.2D + 1.0Ev + 1.0Eh 180° Seismic	306.87	0.0423	0.0001	0.0044	0.0044
1.2D + 1.0Ev + 1.0Eh 180° Seismic	331.07	0.0404	0.0002	0.0063	0.0063
1.2D + 1.0Ev + 1.0Eh 210° Seismic	71.07	0.0125	0.0000	0.0117	0.0117
1.2D + 1.0Ev + 1.0Eh 210° Seismic	127.00	0.0206	0.0001	0.0114	0.0114
1.2D + 1.0Ev + 1.0Eh 210° Seismic	171.07	0.0277	-0.0001	0.0114	0.0114
1.2D + 1.0Ev + 1.0Eh 210° Seismic	182.92	0.0307	-0.0001	0.0099	0.0099
1.2D + 1.0Ev + 1.0Eh 210° Seismic	198.97	0.0332	-0.0007	0.0128	0.0128
1.2D + 1.0Ev + 1.0Eh 210° Seismic	211.07	0.0364	-0.0001	0.0163	0.0163
1.2D + 1.0Ev + 1.0Eh 210° Seismic	215.02	0.0375	-0.0001	0.0154	0.0155
1.2D + 1.0Ev + 1.0Eh 210° Seismic	222.92	0.0393	-0.0002	0.0126	0.0126
1.2D + 1.0Ev + 1.0Eh 210° Seismic	251.07	0.0421	-0.0002	0.0010	0.001
1.2D + 1.0Ev + 1.0Eh 210° Seismic	271.07	0.0411	-0.0005	0.0024	0.0024
1.2D + 1.0Ev + 1.0Eh 210° Seismic	282.92	0.0405	-0.0002	0.0028	0.0028
1.2D + 1.0Ev + 1.0Eh 210° Seismic	295.02	0.0416	-0.0002	0.0027	0.0027
1.2D + 1.0Ev + 1.0Eh 210° Seismic	302.92	0.041	-0.0001	0.0024	0.0024
1.2D + 1.0Ev + 1.0Eh 210° Seismic	306.87	0.0417	-0.0001	0.0023	0.0023
1.2D + 1.0Ev + 1.0Eh 210° Seismic	331.07	0.04	-0.0003	0.0050	0.005
1.2D + 1.0Ev + 1.0Eh 240° Seismic	71.07	0.012	0.0000	0.0109	0.0109
1.2D + 1.0Ev + 1.0Eh 240° Seismic	127.00	0.0189	-0.0002	0.0095	0.0095
1.2D + 1.0Ev + 1.0Eh 240° Seismic	171.07	0.0239	-0.0001	0.0099	0.0099
1.2D + 1.0Ev + 1.0Eh 240° Seismic	182.92	0.0264	-0.0002	0.0088	0.0088
1.2D + 1.0Ev + 1.0Eh 240° Seismic	198.97	0.0284	-0.0006	0.0123	0.0123
1.2D + 1.0Ev + 1.0Eh 240° Seismic	211.07	0.0311	-0.0002	0.0153	0.0153
1.2D + 1.0Ev + 1.0Eh 240° Seismic	215.02	0.0319	-0.0002	0.0141	0.0141
1.2D + 1.0Ev + 1.0Eh 240° Seismic	222.92	0.0335	-0.0003	0.0112	0.0112
1.2D + 1.0Ev + 1.0Eh 240° Seismic	251.07	0.0358	-0.0003	0.0007	0.0008
1.2D + 1.0Ev + 1.0Eh 240° Seismic	271.07	0.035	-0.0006	0.0010	0.001
1.2D + 1.0Ev + 1.0Eh 240° Seismic	282.92	0.0349	-0.0003	0.0023	0.0023
1.2D + 1.0Ev + 1.0Eh 240° Seismic	295.02	0.0358	-0.0003	0.0023	0.0024
1.2D + 1.0Ev + 1.0Eh 240° Seismic	302.92	0.0356	-0.0002	0.0013	0.0013
1.2D + 1.0Ev + 1.0Eh 240° Seismic	306.87	0.0361	-0.0002	0.0009	0.0009
1.2D + 1.0Ev + 1.0Eh 240° Seismic	331.07	0.0352	-0.0003	0.0028	0.0028
1.2D + 1.0Ev + 1.0Eh 300° Seismic	71.07	0.0106	-0.0001	0.0087	0.0087
1.2D + 1.0Ev + 1.0Eh 300° Seismic	127.00	0.0143	-0.0001	0.0100	0.01
1.2D + 1.0Ev + 1.0Eh 300° Seismic	171.07	0.0134	-0.0001	0.0087	0.0087
1.2D + 1.0Ev + 1.0Eh 300° Seismic	182.92	0.0146	-0.0002	0.0098	0.0098
1.2D + 1.0Ev + 1.0Eh 300° Seismic	198.97	0.0154	-0.0006	0.0140	0.014

## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.2D + 1.0Ev + 1.0Eh 300° Seismic	211.07	0.0173	-0.0002	0.0153	0.0153
1.2D + 1.0Ev + 1.0Eh 300° Seismic	215.02	0.0179	-0.0002	0.0141	0.0141
1.2D + 1.0Ev + 1.0Eh 300° Seismic	222.92	0.0192	-0.0003	0.0106	0.0106
1.2D + 1.0Ev + 1.0Eh 300° Seismic	251.07	0.0208	-0.0002	0.0025	0.0025
1.2D + 1.0Ev + 1.0Eh 300° Seismic	271.07	0.0203	-0.0004	0.0026	0.0027
1.2D + 1.0Ev + 1.0Eh 300° Seismic	282.92	0.0207	-0.0002	0.0035	0.0035
1.2D + 1.0Ev + 1.0Eh 300° Seismic	295.02	0.0212	-0.0002	0.0046	0.0046
1.2D + 1.0Ev + 1.0Eh 300° Seismic	302.92	0.0216	-0.0002	0.0046	0.0046
1.2D + 1.0Ev + 1.0Eh 300° Seismic	306.87	0.0217	-0.0002	0.0051	0.0051
1.2D + 1.0Ev + 1.0Eh 300° Seismic	331.07	0.0219	-0.0004	0.0020	0.0021
1.2D + 1.0Ev + 1.0Eh 330° Seismic	71.07	0.0087	0.0000	0.0063	0.0063
1.2D + 1.0Ev + 1.0Eh 330° Seismic	127.00	0.0105	-0.0001	0.0097	0.0097
1.2D + 1.0Ev + 1.0Eh 330° Seismic	171.07	0.0062	-0.0001	0.0074	0.0074
1.2D + 1.0Ev + 1.0Eh 330° Seismic	182.92	0.0066	-0.0001	0.0089	0.0089
1.2D + 1.0Ev + 1.0Eh 330° Seismic	198.97	0.007	-0.0005	0.0130	0.013
1.2D + 1.0Ev + 1.0Eh 330° Seismic	211.07	0.0086	-0.0001	0.0137	0.0137
1.2D + 1.0Ev + 1.0Eh 330° Seismic	215.02	0.0093	-0.0001	0.0120	0.012
1.2D + 1.0Ev + 1.0Eh 330° Seismic	222.92	0.0103	0.0001	0.0084	0.0084
1.2D + 1.0Ev + 1.0Eh 330° Seismic	251.07	0.011	-0.0001	0.0036	0.0036
1.2D + 1.0Ev + 1.0Eh 330° Seismic	271.07	0.0102	-0.0003	0.0037	0.0037
1.2D + 1.0Ev + 1.0Eh 330° Seismic	282.92	0.0103	-0.0001	0.0037	0.0037
1.2D + 1.0Ev + 1.0Eh 330° Seismic	295.02	0.0105	-0.0001	0.0050	0.005
1.2D + 1.0Ev + 1.0Eh 330° Seismic	302.92	0.0107	-0.0001	0.0053	0.0053
1.2D + 1.0Ev + 1.0Eh 330° Seismic	306.87	0.0108	-0.0001	0.0059	0.0059
1.2D + 1.0Ev + 1.0Eh 330° Seismic	331.07	0.0115	-0.0003	0.0029	0.0029
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	71.07	0.0077	0.0000	0.0049	0.0049
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	127.00	0.0089	0.0001	0.0101	0.0101
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	171.07	0.0027	0.0000	0.0069	0.0069
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	182.92	0.0019	0.0000	0.0085	0.0085
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	198.97	0.0019	0.0004	0.0125	0.0125
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	211.07	0.0046	0.0001	0.0129	0.0129
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	215.02	0.0054	0.0001	0.0112	0.0112
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	222.92	0.0067	0.0001	0.0075	0.0075
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	251.07	0.007	0.0000	0.0043	0.0043
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	271.07	0.0055	0.0002	0.0043	0.0043
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	282.92	0.0051	0.0000	0.0040	0.004
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	295.02	0.0047	0.0000	0.0051	0.0051
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	302.92	0.0044	0.0000	0.0055	0.0055
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	306.87	0.0044	0.0000	0.0060	0.006
0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)	331.07	0.0045	0.0002	0.0029	0.0029
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	71.07	0.0098	0.0001	0.0074	0.0074
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	127.00	0.0126	0.0002	0.0120	0.012
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	171.07	0.0118	0.0001	0.0098	0.0098
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	182.92	0.0126	0.0002	0.0112	0.0112
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	198.97	0.0137	0.0005	0.0148	0.0148
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	211.07	0.0158	0.0002	0.0153	0.0153
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	215.02	0.0164	0.0002	0.0139	0.0139
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	222.92	0.0176	0.0003	0.0099	0.0099
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	251.07	0.0183	0.0003	0.0046	0.0046
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	271.07	0.0165	0.0004	0.0061	0.0061
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	282.92	0.0146	0.0002	0.0056	0.0056
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	295.02	0.0148	0.0003	0.0069	0.0069
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	302.92	0.0132	0.0002	0.0077	0.0077
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	306.87	0.0139	0.0002	0.0084	0.0084
0.9D - 1.0Ev + 1.0Eh 60° Seismic (Reduced DL)	331.07	0.0122	0.0004	0.0059	0.0059
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	71.07	0.0108	0.0001	0.0088	0.0088
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	127.00	0.0154	0.0002	0.0120	0.012
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	171.07	0.0179	0.0001	0.0105	0.0105
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	182.92	0.0196	0.0002	0.0113	0.0113
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	198.97	0.0212	0.0004	0.0145	0.0146
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	211.07	0.0234	0.0002	0.0156	0.0156
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	215.02	0.0242	0.0003	0.0142	0.0142
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	222.92	0.0255	0.0003	0.0104	0.0104
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	251.07	0.0267	0.0004	0.0043	0.0043
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	271.07	0.0251	0.0005	0.0061	0.0061
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	282.92	0.0234	0.0003	0.0056	0.0056
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	295.02	0.024	0.0003	0.0068	0.0068
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	302.92	0.0225	0.0003	0.0077	0.0077

## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	306.87	0.0234	0.0003	0.0083	0.0083
0.9D - 1.0Ev + 1.0Eh 90° Seismic (Reduced DL)	331.07	0.0217	0.0004	0.0067	0.0067
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	71.07	0.0116	0.0001	0.0102	0.0102
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	127.00	0.0181	0.0002	0.0117	0.0117
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	171.07	0.0234	0.0001	0.0114	0.0114
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	182.92	0.0258	0.0002	0.0112	0.0112
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	198.97	0.028	0.0006	0.0141	0.0141
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	211.07	0.0308	0.0002	0.0161	0.0161
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	215.02	0.0317	0.0003	0.0147	0.0147
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	222.92	0.0333	0.0003	0.0112	0.0112
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	251.07	0.0351	0.0004	0.0037	0.0037
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	271.07	0.0336	0.0006	0.0057	0.0057
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	282.92	0.0322	0.0003	0.0052	0.0052
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	295.02	0.033	0.0003	0.0062	0.0063
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	302.92	0.0316	0.0003	0.0071	0.0071
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	306.87	0.0326	0.0003	0.0076	0.0076
0.9D - 1.0Ev + 1.0Eh 120° Seismic (Reduced DL)	331.07	0.0307	0.0004	0.0071	0.0072
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	71.07	0.0125	0.0000	0.0116	0.0116
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	127.00	0.0209	0.0002	0.0122	0.0122
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	171.07	0.0286	0.0000	0.0120	0.012
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	182.92	0.0317	0.0000	0.0105	0.0105
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	198.97	0.0344	0.0005	0.0130	0.013
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	211.07	0.0378	0.0000	0.0163	0.0163
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	215.02	0.0389	0.0001	0.0157	0.0157
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	222.92	0.0408	0.0001	0.0128	0.0128
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	251.07	0.0436	0.0001	0.0019	0.0019
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	271.07	0.0424	0.0003	0.0037	0.0038
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	282.92	0.0414	0.0000	0.0036	0.0036
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	295.02	0.0425	0.0001	0.0039	0.0039
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	302.92	0.0416	0.0001	0.0042	0.0042
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	306.87	0.0424	0.0001	0.0044	0.0044
0.9D - 1.0Ev + 1.0Eh 180° Seismic (Reduced DL)	331.07	0.0404	0.0002	0.0064	0.0064
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	71.07	0.0125	0.0000	0.0115	0.0115
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	127.00	0.0206	0.0001	0.0115	0.0115
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	171.07	0.0277	-0.0001	0.0113	0.0113
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	182.92	0.0307	-0.0001	0.0098	0.0098
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	198.97	0.0332	-0.0007	0.0127	0.0127
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	211.07	0.0364	-0.0001	0.0163	0.0163
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	215.02	0.0375	-0.0001	0.0154	0.0154
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	222.92	0.0394	-0.0002	0.0126	0.0126
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	251.07	0.0421	-0.0002	0.0009	0.001
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	271.07	0.0412	-0.0005	0.0024	0.0024
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	282.92	0.0406	-0.0002	0.0028	0.0028
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	295.02	0.0416	-0.0002	0.0027	0.0027
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	302.92	0.041	-0.0001	0.0024	0.0024
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	306.87	0.0417	-0.0001	0.0023	0.0023
0.9D - 1.0Ev + 1.0Eh 210° Seismic (Reduced DL)	331.07	0.0401	-0.0003	0.0051	0.0051
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	71.07	0.0119	0.0000	0.0107	0.0107
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	127.00	0.0189	-0.0002	0.0096	0.0096
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	171.07	0.0239	-0.0001	0.0098	0.0098
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	182.92	0.0264	-0.0002	0.0087	0.0087
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	198.97	0.0284	-0.0006	0.0122	0.0122
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	211.07	0.0311	-0.0002	0.0151	0.0151
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	215.02	0.032	-0.0002	0.0140	0.014
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	222.92	0.0335	-0.0003	0.0112	0.0112
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	251.07	0.0358	-0.0003	0.0008	0.0008
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	271.07	0.0351	-0.0006	0.0010	0.001
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	282.92	0.0349	-0.0003	0.0024	0.0024
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	295.02	0.0358	-0.0003	0.0024	0.0024
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	302.92	0.0357	-0.0002	0.0013	0.0014
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	306.87	0.0362	-0.0002	0.0008	0.0009
0.9D - 1.0Ev + 1.0Eh 240° Seismic (Reduced DL)	331.07	0.0353	-0.0003	0.0029	0.0029
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	71.07	0.0102	-0.0001	0.0080	0.008
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	127.00	0.0137	-0.0001	0.0098	0.0098
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	171.07	0.0126	-0.0001	0.0080	0.008
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	182.92	0.0138	-0.0002	0.0090	0.009
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	198.97	0.0145	-0.0005	0.0132	0.0132
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	211.07	0.0162	-0.0002	0.0143	0.0143

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	215.02	0.0168	-0.0002	0.0131	0.0131
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	222.92	0.0179	-0.0002	0.0097	0.0097
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	251.07	0.0192	-0.0002	0.0027	0.0027
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	271.07	0.0187	-0.0004	0.0026	0.0026
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	282.92	0.0191	-0.0002	0.0033	0.0033
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	295.02	0.0196	-0.0002	0.0044	0.0044
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	302.92	0.02	-0.0002	0.0045	0.0045
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	306.87	0.0202	-0.0002	0.0050	0.005
0.9D - 1.0Ev + 1.0Eh 300° Seismic (Reduced DL)	331.07	0.0205	-0.0003	0.0019	0.0019
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	71.07	0.0087	0.0000	0.0060	0.006
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	127.00	0.0105	-0.0001	0.0096	0.0096
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	171.07	0.0062	-0.0001	0.0073	0.0073
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	182.92	0.0066	-0.0001	0.0087	0.0087
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	198.97	0.007	-0.0005	0.0129	0.0129
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	211.07	0.0086	-0.0001	0.0134	0.0134
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	215.02	0.0092	-0.0001	0.0119	0.0119
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	222.92	0.0102	0.0001	0.0083	0.0083
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	251.07	0.0109	-0.0001	0.0037	0.0037
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	271.07	0.0101	-0.0003	0.0036	0.0037
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	282.92	0.0102	-0.0001	0.0037	0.0037
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	295.02	0.0105	-0.0001	0.0049	0.0049
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	302.92	0.0107	-0.0001	0.0053	0.0053
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	306.87	0.0108	-0.0001	0.0059	0.0059
0.9D - 1.0Ev + 1.0Eh 330° Seismic (Reduced DL)	331.07	0.0115	-0.0003	0.0028	0.0028
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	71.07	0.0277	0.0003	0.0260	0.026
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	127.00	0.0473	0.0017	0.0488	0.0488
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	171.07	0.0889	0.0041	0.0438	0.044
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	182.92	0.0971	0.0019	0.0377	0.0377
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	198.97	0.1081	0.0044	0.0608	0.0608
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	211.07	0.1242	-0.0006	0.0716	0.0716
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	215.02	0.1289	-0.0011	0.0640	0.064
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	222.92	0.1362	-0.0023	0.0391	0.0391
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	251.07	0.1281	-0.0053	0.0711	0.0712
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	271.07	0.0947	-0.0075	0.0980	0.0983
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	282.92	0.0754	-0.0084	0.0949	0.0953
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	295.02	0.0546	-0.0098	0.1059	0.1063
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	302.92	0.0393	-0.0104	0.1176	0.1181
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	306.87	0.0311	-0.0096	0.1256	0.126
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	331.07	0.0295	-0.0068	0.1419	0.1421
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	71.07	0.0299	0.0008	0.0277	0.0277
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	127.00	0.0537	0.0025	0.0515	0.0516
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	171.07	0.1035	0.0015	0.0596	0.0596
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	182.92	0.1154	0.0016	0.0567	0.0568
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	198.97	0.1324	0.0052	0.0825	0.0827
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	211.07	0.153	0.0013	0.0967	0.0967
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	215.02	0.1594	0.0012	0.0899	0.0899
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	222.92	0.1703	0.0010	0.0670	0.067
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	251.07	0.1778	-0.0023	0.0352	0.0352
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	271.07	0.1579	-0.0040	0.0573	0.0574
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	282.92	0.1463	-0.0048	0.0522	0.0524
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	295.02	0.1356	-0.0060	0.0607	0.061
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	302.92	0.1258	-0.0065	0.0710	0.0713
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	306.87	0.1217	-0.0057	0.0782	0.0784
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	331.07	0.0841	-0.0025	0.0926	0.0927
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	71.07	0.0342	0.0037	0.0307	0.0309
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	127.00	0.0562	0.0041	0.0509	0.0509
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	171.07	0.0999	0.0039	0.0502	0.0503
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	182.92	0.1093	0.0060	0.0458	0.0461
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	198.97	0.1224	0.0090	0.0697	0.0702
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	211.07	0.1401	0.0089	0.0833	0.0837
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	215.02	0.1455	0.0097	0.0760	0.0765
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	222.92	0.1544	0.0113	0.0532	0.0541
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	251.07	0.1542	0.0159	0.0553	0.0572
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	271.07	0.1285	0.0180	0.0786	0.0802
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	282.92	0.1136	0.0163	0.0734	0.0752
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	295.02	0.1007	0.0170	0.0816	0.0833
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	302.92	0.0891	0.0171	0.0925	0.0941
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	306.87	0.0849	0.0183	0.0999	0.1015

## DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	331.07	0.0528	0.0222	0.1181	0.1201
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	71.07	0.0419	0.0001	0.0375	0.0375
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	127.00	0.0666	0.0012	0.0479	0.048
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	171.07	0.1074	-0.0038	0.0428	0.043
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	182.92	0.1152	-0.0017	0.0344	0.0344
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	198.97	0.1247	-0.0042	0.0556	0.0556
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	211.07	0.1396	-0.0006	0.0673	0.0673
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	215.02	0.1439	-0.0006	0.0605	0.0605
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	222.92	0.1508	0.0010	0.0365	0.0365
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	251.07	0.1424	0.0019	0.0704	0.0704
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	271.07	0.1099	0.0032	0.0944	0.0945
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	282.92	0.0912	0.0016	0.0883	0.0883
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	295.02	0.074	0.0018	0.0963	0.0963
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	302.92	0.0598	0.0016	0.1078	0.1078
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	306.87	0.054	0.0017	0.1152	0.1152
1.0D + 1.0W Service 120° 60 mph Wind with No Ice	331.07	0.0238	0.0022	0.1361	0.1361
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	71.07	0.0504	-0.0002	0.0472	0.0472
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	127.00	0.0869	-0.0016	0.0573	0.0573
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	171.07	0.1424	-0.0040	0.0677	0.0678
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	182.92	0.1561	-0.0019	0.0603	0.0603
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	198.97	0.1736	-0.0045	0.0844	0.0845
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	211.07	0.195	0.0007	0.1020	0.102
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	215.02	0.2018	0.0013	0.0954	0.0954
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	222.92	0.2136	0.0025	0.0731	0.0731
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	251.07	0.2238	0.0058	0.0318	0.0322
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	271.07	0.204	0.0082	0.0573	0.0579
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	282.92	0.1927	0.0091	0.0510	0.0518
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	295.02	0.182	0.0106	0.0599	0.0607
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	302.92	0.1724	0.0113	0.0717	0.0726
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	306.87	0.1678	0.0106	0.0796	0.0803
1.0D + 1.0W Service 180° 60 mph Wind with No Ice	331.07	0.1271	0.0077	0.1026	0.1029
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	71.07	0.0483	0.0031	0.0444	0.0445
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	127.00	0.0804	0.0031	0.0549	0.0549
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	171.07	0.1293	0.0033	0.0579	0.058
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	182.92	0.1411	0.0055	0.0495	0.0497
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	198.97	0.1553	0.0087	0.0721	0.0726
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	211.07	0.174	0.0097	0.0890	0.0895
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	215.02	0.1798	0.0111	0.0815	0.0823
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	222.92	0.1897	0.0138	0.0594	0.0608
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	251.07	0.1933	0.0223	0.0537	0.0576
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	271.07	0.1698	0.0262	0.0783	0.0825
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	282.92	0.1577	0.0287	0.0724	0.0779
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	295.02	0.1453	0.0315	0.0819	0.0875
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	302.92	0.1362	0.0330	0.0934	0.0991
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	306.87	0.1313	0.0326	0.1013	0.1064
1.0D + 1.0W Service 210° 60 mph Wind with No Ice	331.07	0.0991	0.0307	0.1242	0.1276
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	71.07	0.044	-0.0004	0.0388	0.0388
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	127.00	0.0685	-0.0017	0.0455	0.0456
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	171.07	0.1077	-0.0004	0.0434	0.0434
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	182.92	0.1162	-0.0004	0.0335	0.0335
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	198.97	0.1256	-0.0039	0.0553	0.0553
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	211.07	0.1405	0.0008	0.0677	0.0677
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	215.02	0.1449	0.0012	0.0611	0.0611
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	222.92	0.1519	0.0021	0.0374	0.0375
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	251.07	0.1441	0.0041	0.0683	0.0683
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	271.07	0.1122	0.0060	0.0914	0.0916
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	282.92	0.0951	0.0067	0.0838	0.0841
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	295.02	0.0773	0.0082	0.0919	0.0923
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	302.92	0.0643	0.0089	0.1033	0.1037
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	306.87	0.0573	0.0081	0.1109	0.1112
1.0D + 1.0W Service 240° 60 mph Wind with No Ice	331.07	0.0179	0.0053	0.1324	0.1325
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	71.07	0.0345	-0.0006	0.0316	0.0316
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	127.00	0.0592	-0.0021	0.0493	0.0493
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	171.07	0.106	0.0024	0.0588	0.0589
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	182.92	0.1182	0.0002	0.0549	0.0549
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	198.97	0.1347	-0.0045	0.0814	0.0814
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	211.07	0.1552	-0.0017	0.0967	0.0967
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	215.02	0.1616	-0.0020	0.0903	0.0903

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	222.92	0.1727	-0.0027	0.0680	0.068
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	251.07	0.1812	-0.0040	0.0323	0.0325
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	271.07	0.1625	-0.0054	0.0532	0.0534
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	282.92	0.1526	-0.0041	0.0481	0.0482
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	295.02	0.1423	-0.0046	0.0555	0.0557
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	302.92	0.1341	-0.0045	0.0656	0.0657
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	306.87	0.1294	-0.0049	0.0724	0.0726
1.0D + 1.0W Service 300° 60 mph Wind with No Ice	331.07	0.0939	-0.0057	0.0888	0.089
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	71.07	0.0304	0.0031	0.0285	0.0286
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	127.00	0.0527	0.0031	0.0513	0.0513
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	171.07	0.0964	0.0090	0.0513	0.052
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	182.92	0.1065	0.0072	0.0465	0.047
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	198.97	0.1206	0.0085	0.0711	0.0716
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	211.07	0.1387	0.0075	0.0849	0.0853
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	215.02	0.1443	0.0080	0.0775	0.0778
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	222.92	0.1536	0.0090	0.0549	0.0554
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	251.07	0.1552	0.0112	0.0558	0.0566
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	271.07	0.1321	0.0122	0.0804	0.081
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	282.92	0.1201	0.0104	0.0779	0.0786
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	295.02	0.1085	0.0111	0.0876	0.0883
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	302.92	0.1006	0.0110	0.0983	0.0989
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	306.87	0.0966	0.0122	0.1055	0.1062
1.0D + 1.0W Service 330° 60 mph Wind with No Ice	331.07	0.0786	0.0159	0.1206	0.1215



**Site Name:** Wolcott-Waterbury, CT  
**Site Number:** 207941  
**Tower Type:** GT  
**Design Loads (Factored) - Analysis per TIA-222-H Standards**

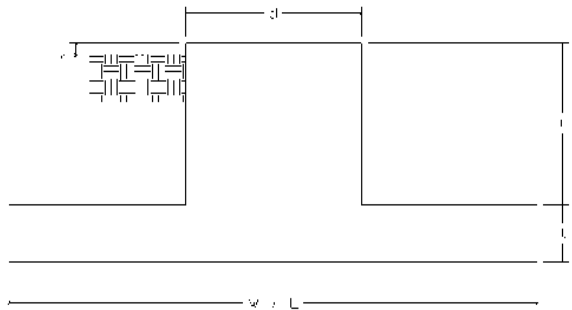
## Monolithic Mat & Pier Foundation Analysis

Foundation Analysis Parameters		
Design / Analysis / Mapping:	Mapping	-
Compression/Leg:	51.9	k
Uplift/Leg:	0.0	k
Total Shear:	1.4	k
Moment:	41.5	k-ft
Total Combined Axial Compressive Load:	87.2	k
Depth to Base of Foundation (l + t - h):	3.8	ft
Diameter Base Plate (d):	0	ft
Length of Pier (l):	0	ft
Height of Pier above Ground (h):	0	ft
Width of Pad (W):	9	ft
Length of Pad (L):	9	ft
Thickness of Pad (t):	5	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	1.5	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	105	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	42.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.35	-
Ultimate Compressive Bearing Pressure:	30,000	psf
Ultimate Passive Pressure on Pad Face:	438	psf
$f_{\text{Soil and Concrete Weight}}$ :	0.9	-
$f_{\text{Soil}}$ :	0.6	-

Overturning Moment Usage		
Design OTM:	48.5	k-ft
OTM Resistance:	469.6	k-ft
Design OTM / OTM Resistance:	10%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	2127	psf
Factored Nominal Bearing Pressure:	18000	psf
Factored Nominal (Net) Bearing Pressure:	12%	Pass
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge	

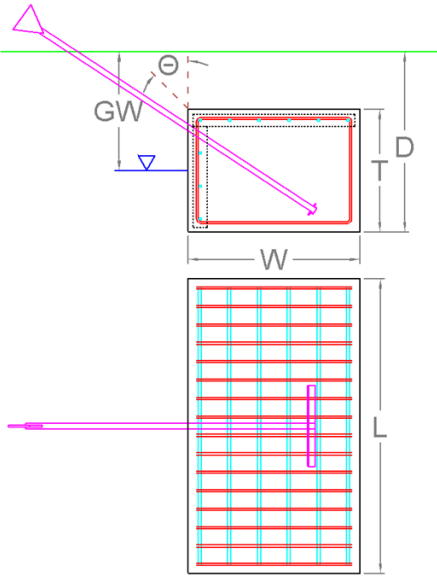
Sliding Factor of Safety		
Ultimate Friction Resistance:	40.5	k
Ultimate Passive Pressure Resistance:	11.8	k
Total Factored Sliding Resistance:	31.4	k
Sliding Design / Sliding Resistance:	4%	Pass



# Guy Anchor Block Analysis (ANSI/TIA-222-H)

Anchor Block Parameters			
Include Berm?		N	
Analyze Anchor Rod?		Y	
Ignore Rebar?		Y	
Base Depth	<i>D</i>	6.5	ft
Width	<i>W</i>	4.0	ft
Length	<i>L</i>	8.0	ft
Thickness	<i>T</i>	6.0	ft
Water Table Depth [BGL]	<i>GW</i>	1	ft
Unit Weight of Concrete		150	pcf
Unit Weight of Soil Above Water Table		105.0	pcf
Unit Weight of Water		62.4	pcf
Unit Weight of Soil [Submerged]		42.6	pcf
Friction Angle		29	°
Cohesion		0	psf
Ultimate Skin Friction		0	psf
Coefficient of Shear Friction		0.35	
Conical Failure Angle	$\Theta$	30	°
Soil Uplift at _____ of Anchor		Top	
Capacity Increase (Transient Loads)		1.00	
Uplift Strength Reduction Factor, $\phi_u$		0.75	
Shear Strength Reduction Factor, $\phi_v$		0.75	
Dead Load Factor		0.90	

Reactions		
Uplift, $T_u$	6.7	k
Shear, $V_u$	9.3	k
Anchor Radius	172	ft
Node	A1	-



Soil Uplift Capacity		
Uplift Resistance from Skin Friction and Soil Shear	0.0	k
Nominal Uplift Resistance, $\phi_u T_n$	17.7	k
$T_u / \phi_u T_n$	<b>37.8%</b>	

Soil Shear Capacity		
Shear Resistance from Skin Friction	0.0	k
Shear Friction Resistance Due to Normal Force	3.8	k
Passive Pressure	610	psf
Passive Pressure Resistance	29.3	k
Nominal Shear Resistance, $\phi_v V_n$	24.8	k
$V_u / \phi_v V_n$	<b>37.4%</b>	



### Anchor Rod Capacity

Anchor Rod Shape	Solid Rod	
Quantity of Rods	1	
Gross Area (Individual)	1.23	in <sup>2</sup>
Net Area (Individual)	1.23	in <sup>2</sup>
Yield Strength, $F_y$	36	ksi
Tensile Strength, $F_u$	58	ksi
Yield Strength Reduction Factor, $\phi_y$	0.80	
Tensile Strength Reduction Factor, $\phi_t$	0.65	
Resultant Tensile Load, $T_u$	11.4	k
Tensile Resistance, $\phi T_n$	35.4	k
$T_u / \phi T_n$ :	<b>32.3%</b>	





DISH WIRELESS, L.L.C. SITE ID:

**BOHVN00036A**

DISH WIRELESS, L.L.C. SITE ADDRESS:

**164 COUNTY ROAD  
WOLCOTT, CT 06716**

**CONNECTICUT CODE COMPLIANCE**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

**SHEET INDEX**

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-0	PARCEL PLAN
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

**SCOPE OF WORK**

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

- TOWER SCOPE OF WORK:**
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
  - INSTALL (3) PROPOSED ANTENNA SECTOR FRAME MOUNTS (1 PER SECTOR)
  - INSTALL PROPOSED JUMPERS
  - INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
  - INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
  - INSTALL (1) PROPOSED HYBRID CABLE

- GROUND SCOPE OF WORK:**
- INSTALL (1) PROPOSED METAL PLATFORM
  - INSTALL (1) PROPOSED ICE BRIDGE
  - INSTALL (1) PROPOSED PPC CABINET
  - INSTALL (1) PROPOSED EQUIPMENT CABINET
  - INSTALL (1) PROPOSED POWER CONDUIT
  - INSTALL (1) PROPOSED TELCO CONDUIT
  - INSTALL (1) PROPOSED TELCO-FIBER BOX
  - INSTALL (1) PROPOSED GPS UNIT
  - INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
  - INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)

**SITE PHOTO**



UNDERGROUND SERVICE ALERT CBYD 811  
UTILITY NOTIFICATION CENTER OF CONNECTICUT  
(800) 922-4455  
WWW.CBYD.COM



CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

**GENERAL NOTES**

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

**SITE INFORMATION**

PROPERTY OWNER: INSITE TOWERS, LLC  
ADDRESS: 301 N FAIRFAX ST, SUITE 101  
ALEXANDRIA, VA 22314

TOWER TYPE: GUYED TOWER

TOWER CO SITE ID: 207941

TOWER APP NUMBER: 13729960\_D2

COUNTY: NEW HAVEN

LATITUDE (NAD 83): 41° 34' 34.388" N  
41.57621876

LONGITUDE (NAD 83): 72° 57' 21.849" W  
-72.95606903

ZONING JURISDICTION: NEW HAVEN

ZONING DISTRICT:

PARCEL NUMBER: 122-19B

OCCUPANCY GROUP: U

CONSTRUCTION TYPE: II-B

POWER COMPANY: ITRON

TELEPHONE COMPANY: UNKNOWN

**PROJECT DIRECTORY**

APPLICANT: DISH WIRELESS, L.L.C.  
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

TOWER OWNER: AMERICAN TOWER  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801

ENGINEER: ATC TOWER SERVICES, LLC  
3500 REGENCY PARKWAY SUITE 100  
CARY, NC 27518

SITE ACQUISITION: DAVID GOODFELLOW  
DAVID.GOODFELLOW@DISH.COM

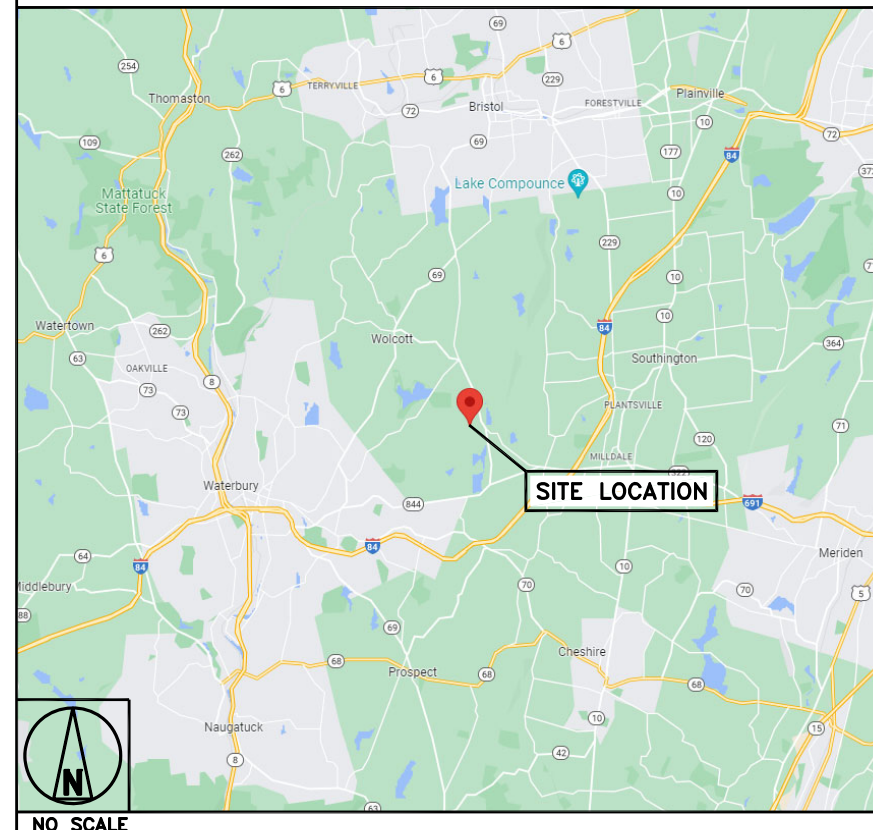
CONSTRUCTION MANAGER: CHAD WILCOX  
CHAD.WILCOX@DISH.COM

RF ENGINEER: SYED ZAIDI  
SYED.ZAIDI@DISH.COM

**DIRECTIONS**

FROM WATERBURY-OXFORD AIRPORT, GET ON I-84 E IN MIDDLEBURY FROM AIRPORT ROAD AND CT-188 N. THEN FOLLOW I-84 E TO CT-70 W/STATE HWY 801 IN CHESHIRE. TAKE EXIT 26 FROM I-84 E, THEN TAKE CT-322 W TO YOUR DESTINATION IN WOLCOTT

**VICINITY MAP**



NO SCALE



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

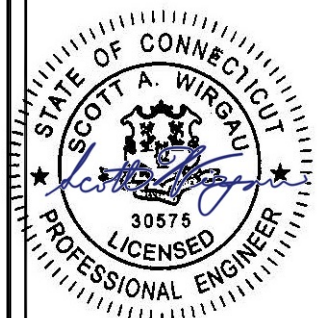


DRAWN BY:	CHECKED BY:	APPROVED BY:
LR	SRF	SRF

RFDS REV #: ----

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/23/2022	ISSUED FOR CONSTRUCTION
1	04/25/2022	REVISED OSP / FIBER MMP



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A&E PROJECT NUMBER  
207941-13729960\_D2

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

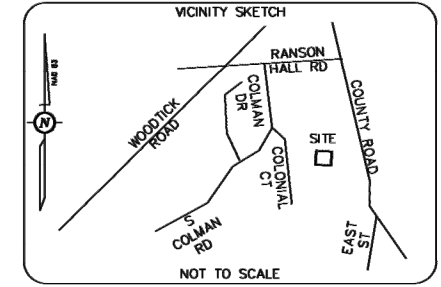
SHEET TITLE  
TITLE SHEET

SHEET NUMBER

**T-1**

# AS-BUILT SURVEY

NEW HAVEN COUNTY  
TOWN OF WOLCOTT, CT  
FOR: InSite Towers, LLC.



Form of Surveyor's Certificate for Existing Towers

I, MATTHEW BATTEY, do hereby certify to InSite Towers, LLC, a Delaware limited liability company with its headquarters address at 301 N. Fairfax Street, Suite 101, Alexandria, VA 22314 ("InSite Towers"), InSite Wireless Group, LLC, a Delaware limited liability company its Successors assignees and lenders, Stewart Title Guaranty Company, of each of the foregoing that this survey was made on the ground under my personal supervision and that this plot is a true, correct and accurate representation of the facts as found at the time of the survey, and more specifically,

I so hereby certify that the survey conforms to the conditions and stipulations as checked (x) below.

(X) 1. The boundary lines and dimensions of the InSite Towers Property and access and utilities easements (collectively, the "Easements") indicated herein is correct.

(X) 2. To the extent the Property and Easements indicated herein are part of a parent parcel, such Property and Easements are located within the boundaries of the record title legal description of such parent parcel. The location of said Property and Easements relative to an approximation of the location of the boundaries of the parent tract is illustrated on the inset shown hereon.

(X) 3. Shows the location and dimension of all alleys, streets, roads, rights-of-way, easements and other matters of record which the surveyor has been advised affects the Property and/or Easements (each has been identified by instrument volume and page number if available).

(X) 4. Except as shown, there are no visible easements, rights-of-way, party walls or conflicts affecting the Property and/or Easements; further, this survey is not subject to any easements or rights-of-way not visible on the ground.

(X) 5. The location of all buildings, structures and other improvements of visible items affecting the Property and Easements, if shown, are as indicated hereon. The location of all other buildings, structures and other improvements of visible items on the parent tract, if shown hereon, are approximate in nature, except that the Property and Easements are entirely located within the boundaries of the parent parcel, as shown on the inset.

(X) 6. Except as shown, there are no visible protrusions on adjoining premises, streets or alleys by any building, structure or other improvements situated on the Property and/or Easements and there are no visible encroachments onto the Property and/or Easements by any building, structure or other improvements situated on adjoining premises.

( ) 7a. Shows the location and acres contained in all portions of the Property and Easements which are located in an area designated as a "FLOOD PRONE AREA (ZONE A)" as defined by the U.S. Department of Housing and Urban Development pursuant to the Flood Disaster Act of 1973; NONE, FIRM Community Panel Number xxxxxxxx

(X) 7b. The site Property and Easements are located in an area designated as a Flood Zone (X) as defined by the U.S. Department of Housing and Urban Development pursuant to the Flood Disaster Act of 1973 FIRM Community Panel No.09009C0129H

(X) 8. Describes and shows the location of all public streets and roads visibly providing access to and from the subject property, and correctly sets forth the municipal address of the subject property.

MURPHY GEOMATICS

*Matthew R. Battey*  
MATTHEW BATTEY  
LAND SURVEYOR - CT # 70369  
Date of Survey: APRIL 28 2012

Date of Last Revision



LINE	BEARING	LENGTH
L1	N3° 42' 38"W	21.09
L2	N67° 46' 48"E	74.98
L3	N72° 18' 56"E	400.06
L4	N68° 22' 58"E	244.87
L5	N83° 14' 38"E	85.06
L6	N69° 56' 52"E	247.64
L7	S12° 43' 40"E	8.17
L8	S29° 59' 09"E	12.08
L9	S69° 56' 52"W	251.02
L10	S83° 14' 38"W	84.79
L11	S68° 22' 58"W	242.95
L12	S72° 18' 56"W	399.96
L13	S67° 46' 48"W	80.88

PAR# 122-198  
COCOM, LLC, F/K/A TELESYSTEMS OF CONN., INC.  
DB 400, PG 326

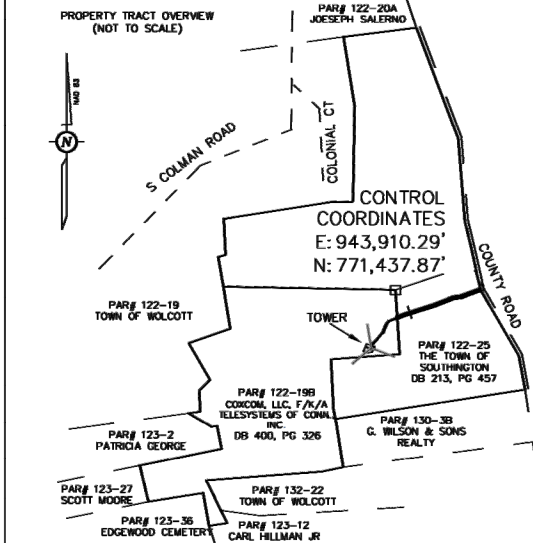
PAR# 122-25  
THE TOWN OF SOUTHINGTON  
DB 213, PG 457

CONTROL COORDINATES  
CONNECTICUT SPC (NAD83)  
E: 943,953.00'  
N: 770,667.00'

## LEGAL:

That certain piece or parcel of land situated in the Town of Wolcott, County of New Haven, State of Connecticut, westerly from County Road, bounded and described as follows: by land of Town of Southington; Easterly by land of Town of Southington; Southerly by land now or formerly of Brown Brothers and land of Town of Southington; Westerly by land now or formerly of Brown Brothers and land now or formerly of B.L. Frabrie.

LEGAL DESCRIPTION OF: 20' Access/Utility Easement  
From the POINT OF BEGINNING Having Connecticut State Plane Coordinates: E:943,925.25' -AND- N:771,094.91'; Thence, N 03° 42' 38" W for a distance of 21.09 feet to a point; Thence, N 67° 46' 48" E for a distance of 74.98 feet to a point; Thence, N 72° 18' 56" E for a distance of 400.06 feet to a point; Thence, N 68° 22' 58" E for a distance of 244.87 feet to a point; Thence, N 83° 14' 38" E for a distance of 85.06 feet to a point; Thence, N 69° 56' 52" E for a distance of 247.64 feet to a point; Thence, S 12° 43' 40" E for a distance of 8.17 feet to a point; Thence, S 29° 59' 09" E for a distance of 12.08 feet to a point; Thence, S 69° 56' 52" W for a distance of 251.02 feet to a point; Thence, S 83° 14' 38" W for a distance of 84.79 feet to a point; Thence, S 68° 22' 58" W for a distance of 242.95 feet to a point; Thence, S 72° 18' 56" W for a distance of 399.96 feet to a point; Thence, S 67° 46' 48" W for a distance of 80.88 feet to the POINT OF BEGINNING; Containing 21,107 square feet -and- 0.48 Acres.



## SURVEY NOTES:

1. BASIS OF BEARING:  
CT GRID NAD 83
2. NO SUBSURFACE INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE LIMITED TO AND ARE PER OBSERVED EVIDENCE ONLY.
3. THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT PARCEL.
4. ALL VISIBLE TOWER EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITHIN THE DESCRIBED AREA.
5. BOUNDARY CONTROL FROM TOWN GIS

## TITLE REVIEW:

I HAVE REVIEWED COMMITMENT FOR TITLE INSURANCE, UNDERWRITTEN BY STEWART TITLE GUARANTY COMPANY, WITH AN EFFECTIVE DATE OF APRIL 25, 2012 AT 8:00 A.M., COMMITMENT NUMBER CTH3125, AND FIND AS FOLLOWS WITH RESPECT TO THE EXCEPTIONS LISTED IN SCHEDULE B-SECTION 2 OF SAID COMMITMENT:

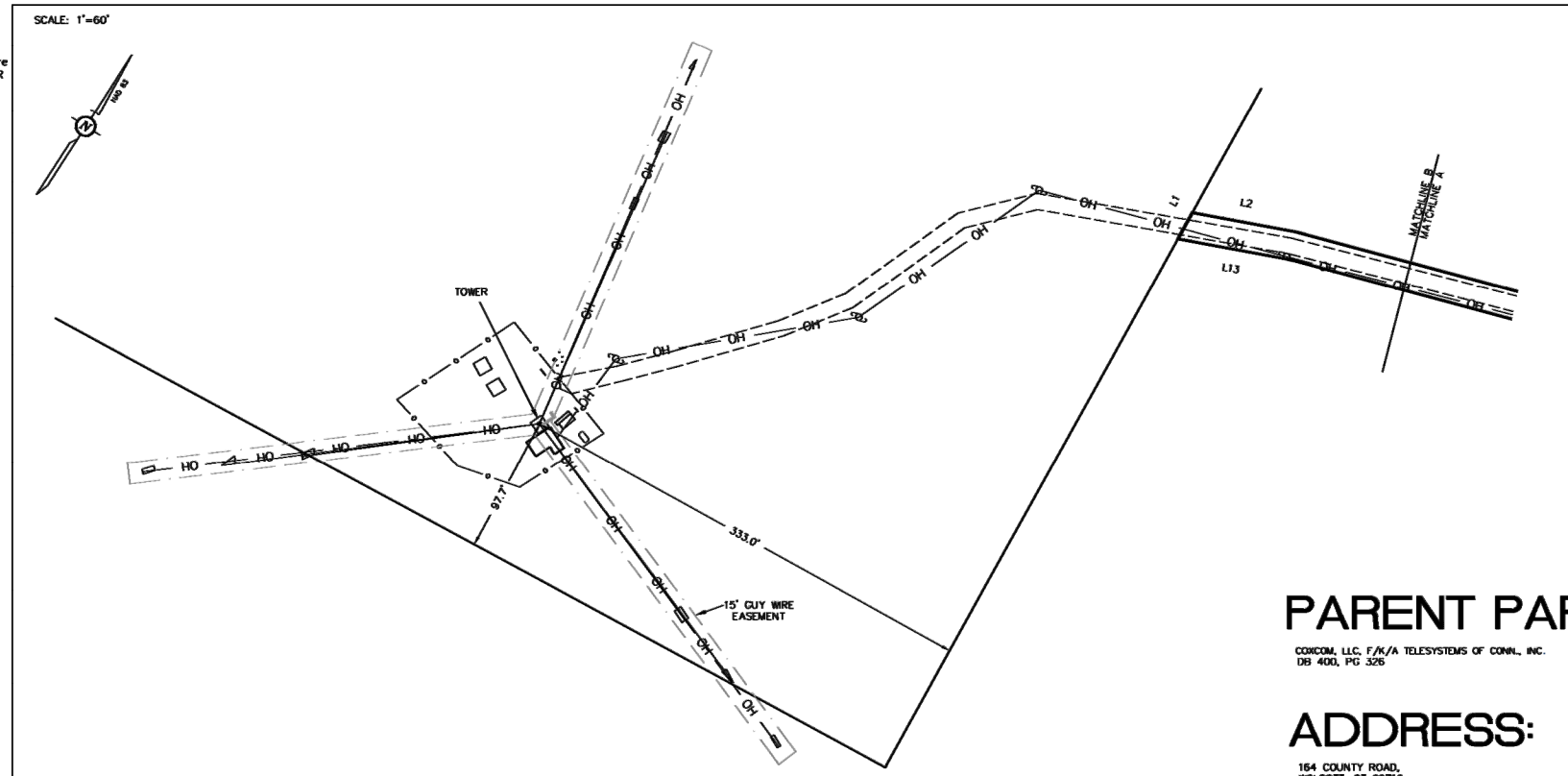
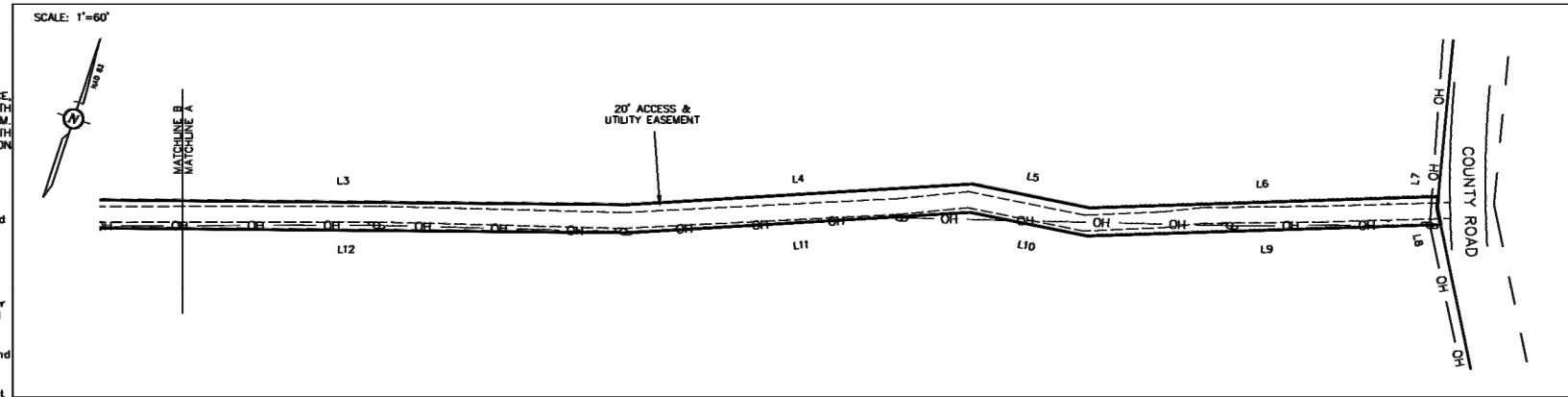
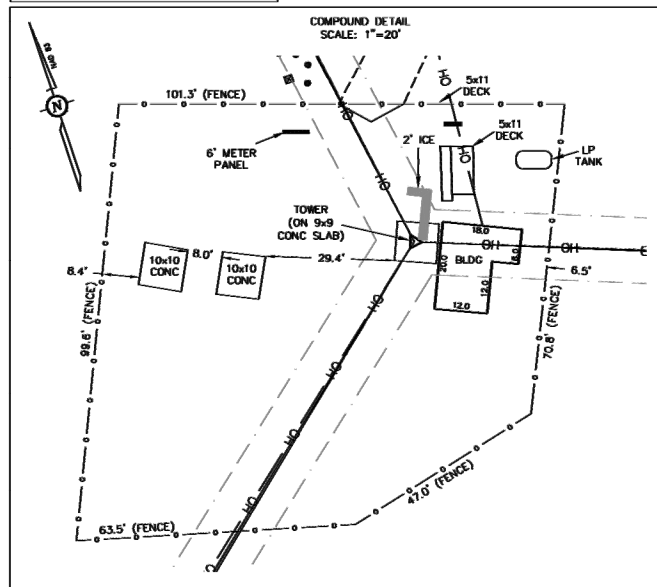
1. Defects, liens, encumbrances, adverse claims or other matters, if any, created first appearing in the public records or attaching subsequent to the effective date hereof, but prior to the date of the Proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment. NOT A SURVEY MATTER
2. Rights or claims or parties in possession not shown by the public records. NOT A SURVEY MATTER
3. Easements or claims of easements not shown by the public records. NOT A SURVEY MATTER
4. Encroachments, overlaps, boundary line disputes or other matters which would be disclosed by an accurate survey and inspection of the premises. NOT A SURVEY MATTER
5. Any lien or right to a lien, for services, labor, or material heretofore or hereafter furnished, imposed by law and not shown by the public records. NOT A SURVEY MATTER
6. Liens for all real estate taxes and assessments for the year October 1, 2011 and all subsequent years, which are not yet due and payable. NOTE: Real property taxes are paid through June 30, 2012. NOT A SURVEY MATTER

Special Exceptions:  
7. Any matters affecting title which do not purport to secure or evidence a monetary obligation. NOT A SURVEY MATTER

- ### LEGEND
- : SET 5/8" REBAR.
  - : FOUND 1/2" REBAR AS NOTED.
  - (---) : RECORD DESCRIPTION DATA.
  - P.O.B. : POINT OF BEGINNING.
  - P.O.C. : POINT OF COMMENCEMENT.
  - : FENCE AS NOTED.
  - : OVER HEAD UTILITY LINES.
  - ☐ : WOOD UTILITY POLE.
  - ☐ : ELECTRIC TRANSFORMER.
  - ☐ : TELCO PEDESTAL.
  - ☐ : WATER METER.
  - ☐ : CABLE TELEVISION

AREA	SQUARE FEET	ACRE
PARENT PARCEL	4402020	101
TOWER PARCEL	N/A	N/A
COMPOUND AREA	9270	0.21
ACCESS EASEMENT	21107	0.48

ZONING: RESIDENTIAL  
THIS PARCEL OF LAND LIES WITHIN FLOOD ZONE X WHICH IS NOT A SPECIAL FLOOD HAZARD AREA AS PER FIRM PANEL NUMBER: 09009C0129H EFFECTIVE DATE: DECEMBER 17, 2010



## PARENT PARCEL:

COCOM, LLC, F/K/A TELESYSTEMS OF CONN., INC.  
DB 400, PG 326

## ADDRESS:

164 COUNTY ROAD,  
WOLCOTT, CT 06716

INSITE SITE NAME:  
CT900 WOLCOTT

SURVEY WORK PERFORMED BY:

**murphy GEOMATICS**  
Professional Land Surveying

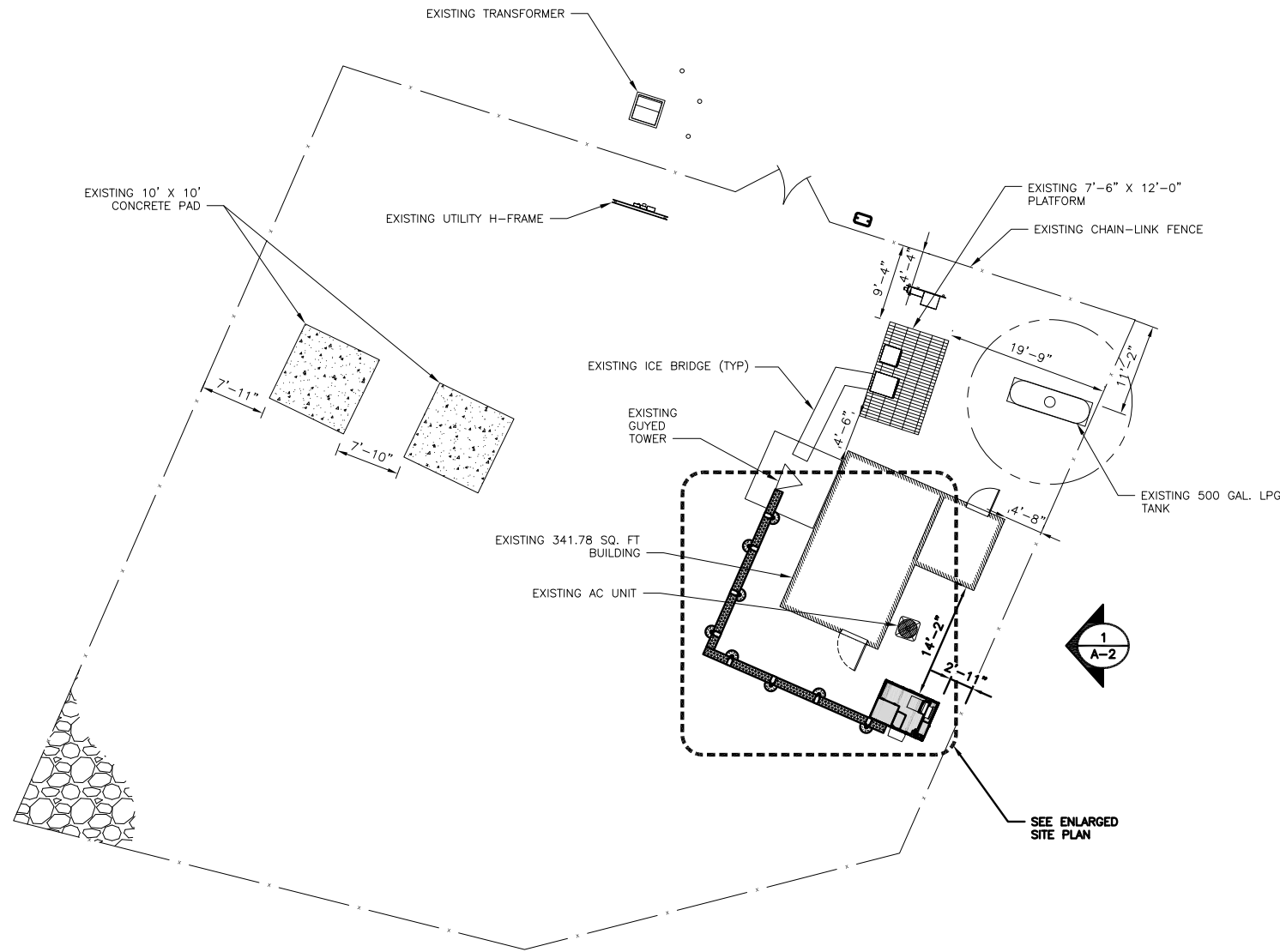
6308 J. Richard Drive (919) 787-7873  
Raleigh NC 27617-4601 FAX 881-9575  
FIRM# C-0257 E-MAIL: rosel@murphygeomatics.com

NATIONAL SURVEY SERVICES COORDINATION BY:

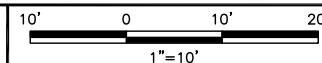
**GEOLINE SURVEYING, INC.**  
13430 NW 104th Terrace, Suite A  
Alachua, FL 32615  
(386) 418-0500  
(386) 462-9986 Fax  
WWW.GEOLINEINC.COM

**NOTES**

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



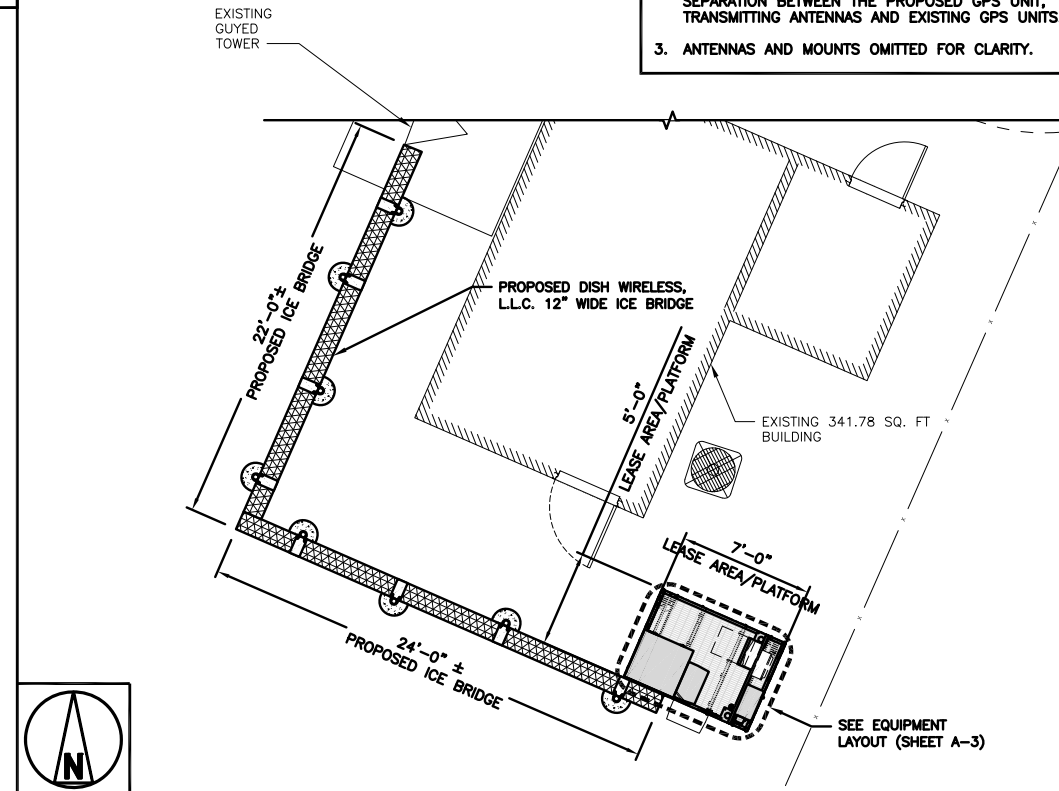
**OVERALL SITE PLAN**



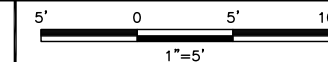
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**NOTES**

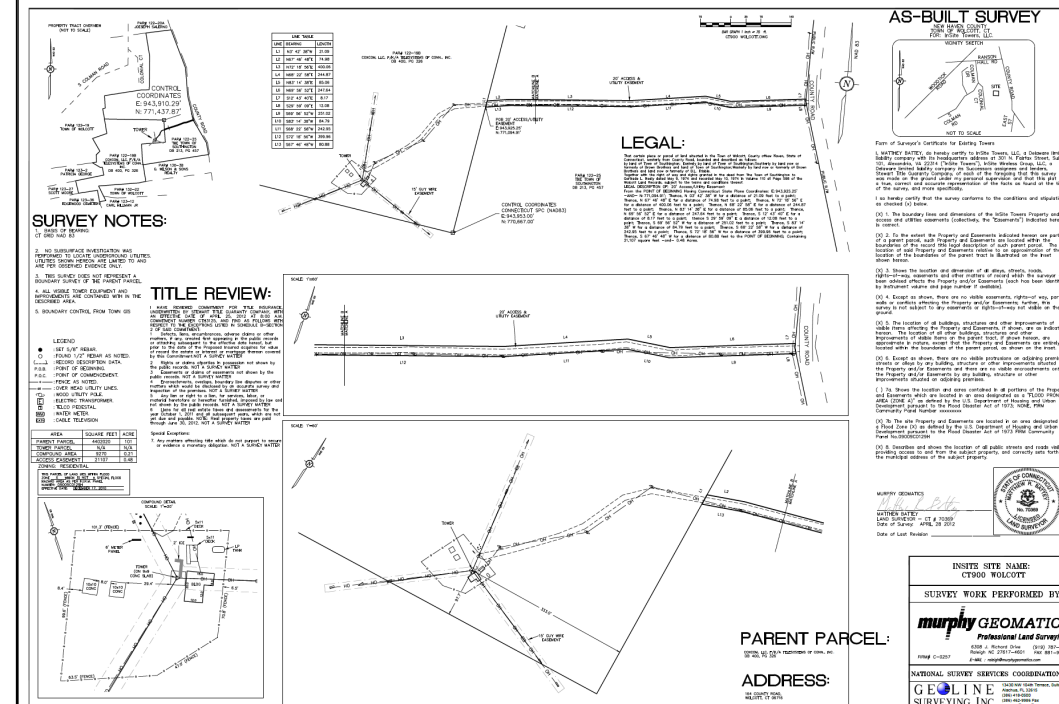
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



**ENLARGED SITE PLAN**



2



**EXISTING SURVEY (BY OTHERS)**

NO SCALE

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

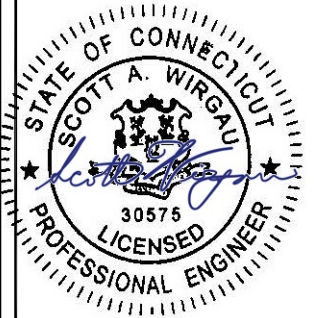


DRAWN BY:	CHECKED BY:	APPROVED BY:
LR	SRF	SRF

RFDS REV #: -----

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
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A&E PROJECT NUMBER  
207941-13729960\_D2

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

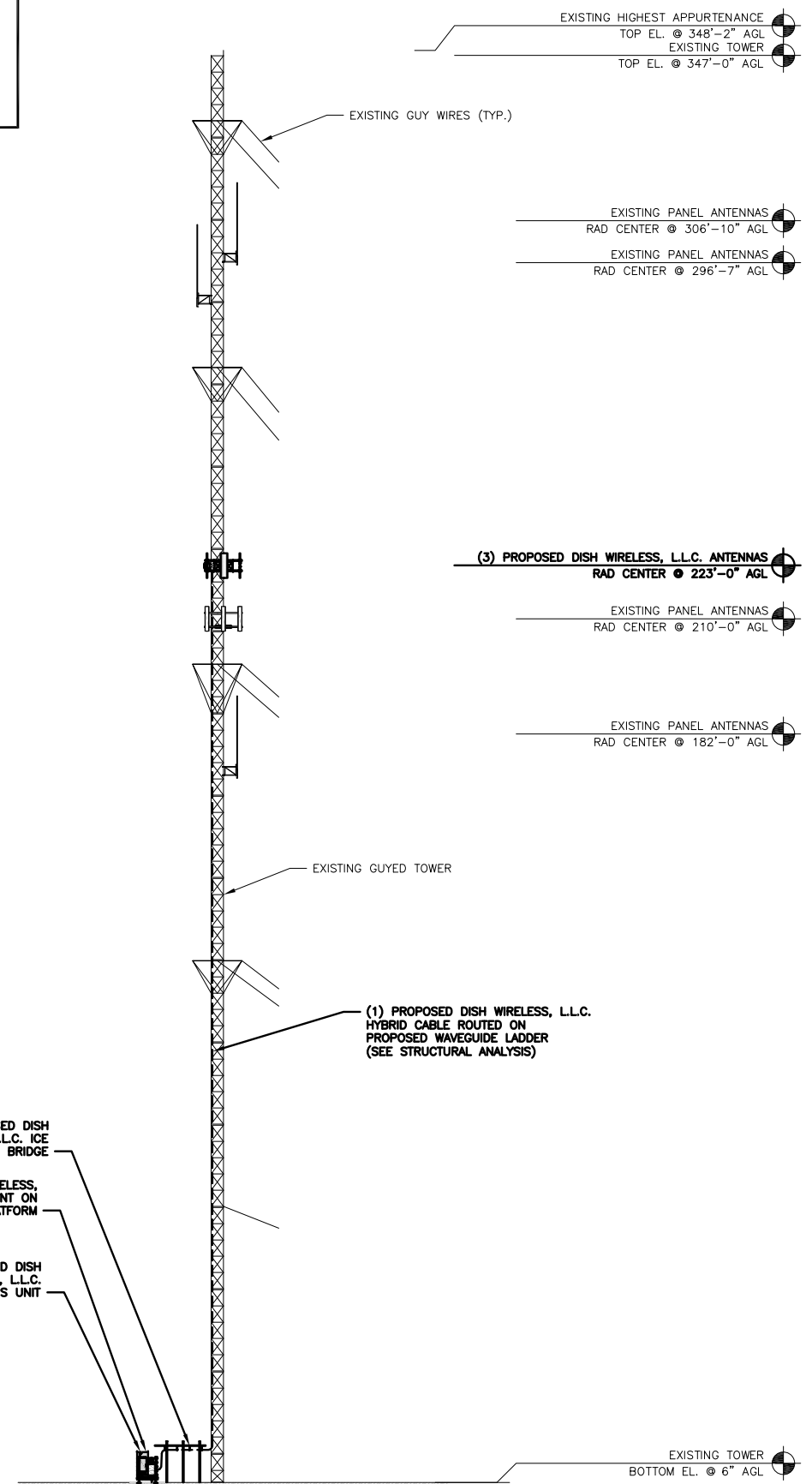
SHEET TITLE  
OVERALL AND ENLARGED  
SITE PLAN

SHEET NUMBER

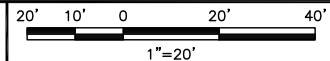
**A-1**

**NOTES**

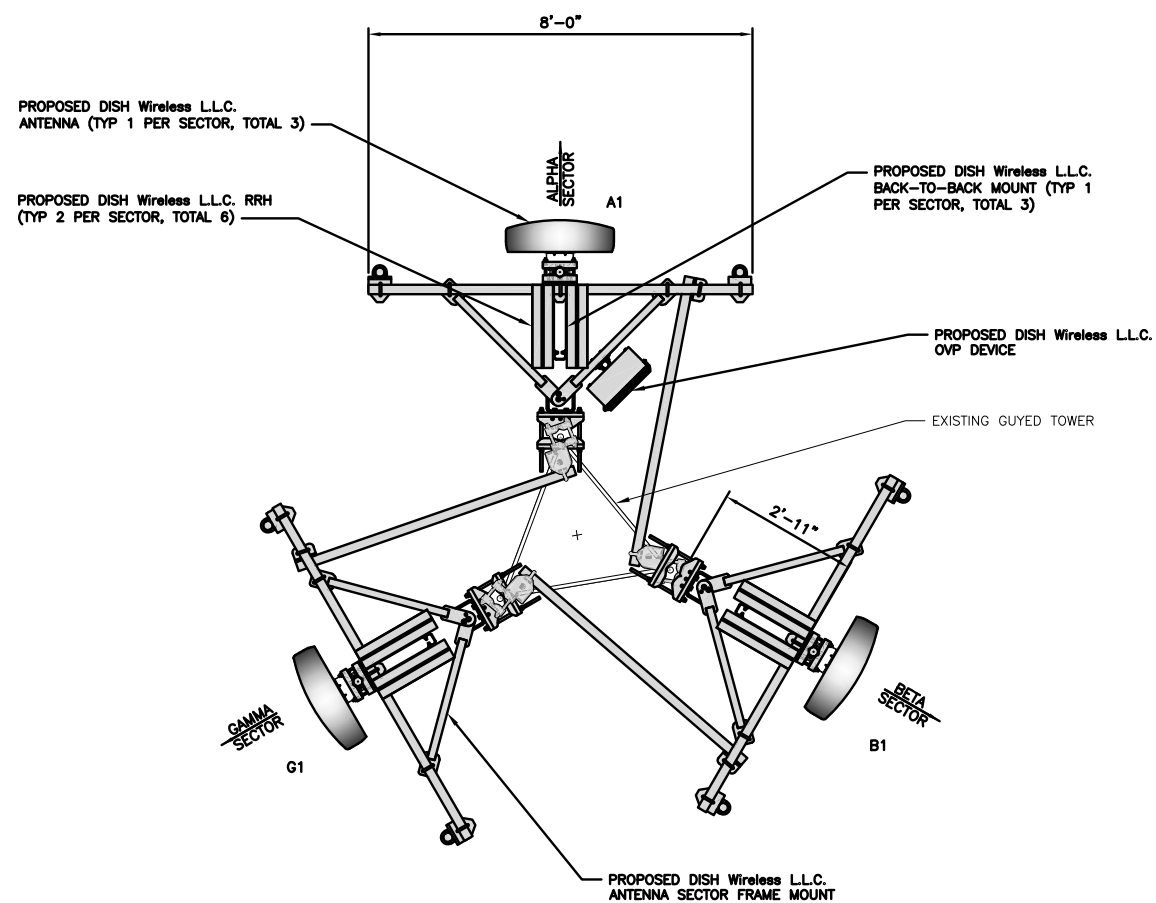
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



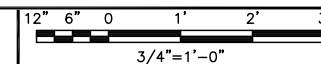
**PROPOSED NORTH ELEVATION**



1



**ANTENNA LAYOUT**



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72.0" x 20.0"	0°	223'-0"	(1) HIGH-CAPACITY HYBRID CABLE (310' LONG)  (1) RAYCAP RDIC-9181-PF-48 OVP
BETA	B1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72.0" x 20.0"	120°	223'-0"	
GAMMA	G1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72.0" x 20.0"	240°	223'-0"	

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU - TA08025-B605	N29 / N71	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.  2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A2	FUJITSU - TA08025-B604	N66 / N70	
BETA	B1	FUJITSU - TA08025-B605	N29 / N71	
	B2	FUJITSU - TA08025-B604	N66 / N70	
GAMMA	G1	FUJITSU - TA08025-B605	N29 / N71	
	G2	FUJITSU - TA08025-B604	N66 / N70	

**ANTENNA SCHEDULE**

NO SCALE

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**AMERICAN TOWER®**  
A.T. ENGINEERING SERVICE, PLLC  
3500 REGENCY PARKWAY  
SUITE 100  
CARY, NC 27518  
PHONE: (919) 468-0112  
COA: PEC.0001553

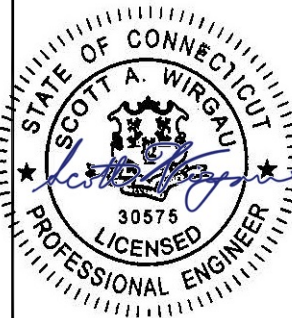
DRAWN BY: CHECKED BY: APPROVED BY:

LR SRF SRF

RFDS REV #: - - - -

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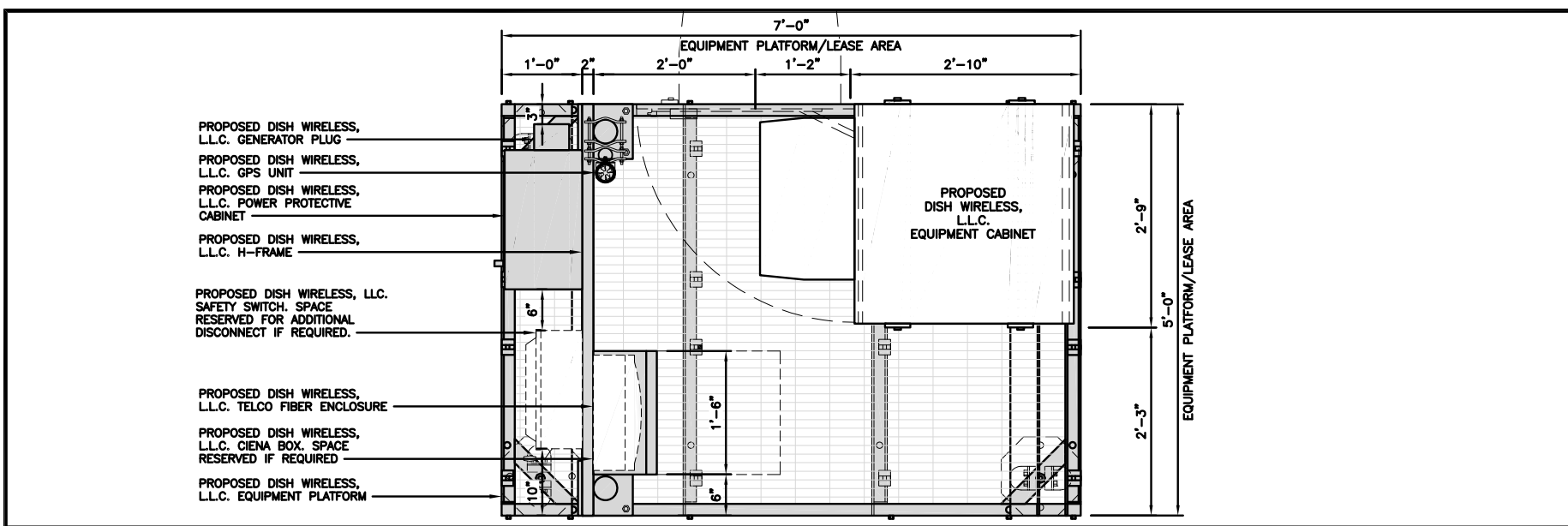
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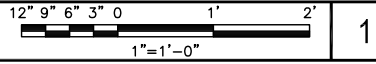
SHEET TITLE  
ELEVATION, ANTENNA  
LAYOUT AND SCHEDULE

SHEET NUMBER

**A-2**

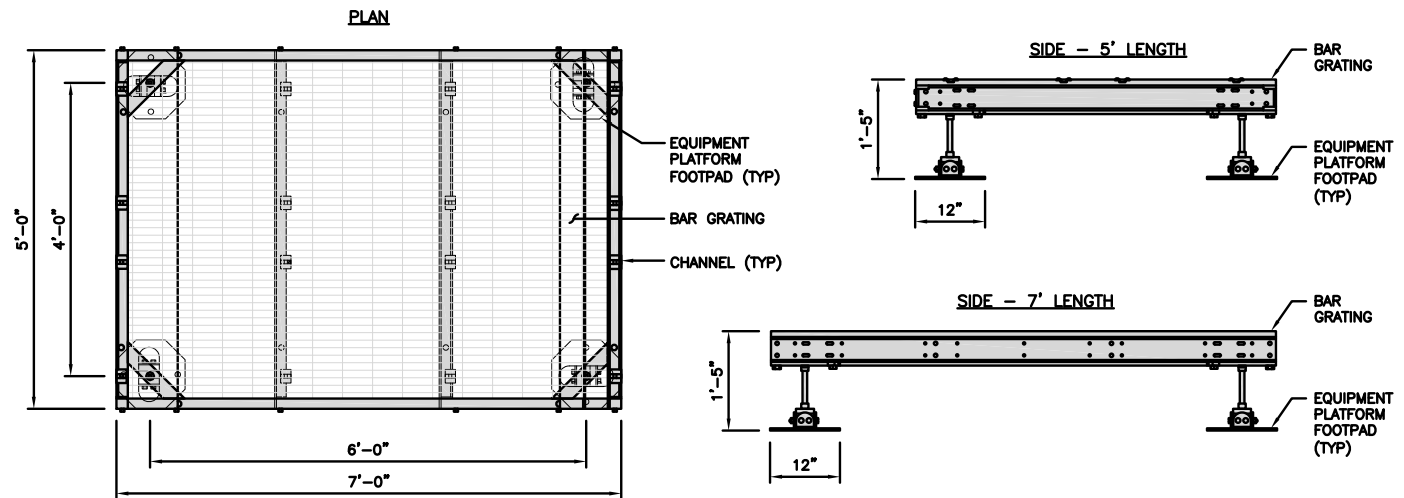


PLATFORM EQUIPMENT PLAN



COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

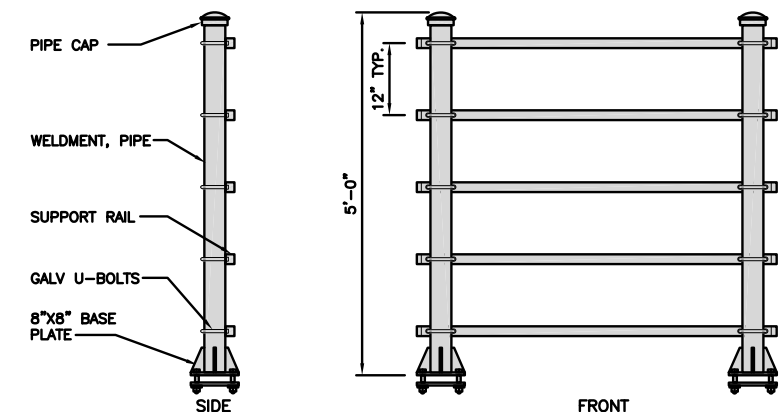
NOTE:  
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"  
PLATFORM TO BE WITHIN 1' OF LEVEL



PLATFORM DETAIL

NO SCALE 2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS



H-FRAME DETAIL

NO SCALE 3

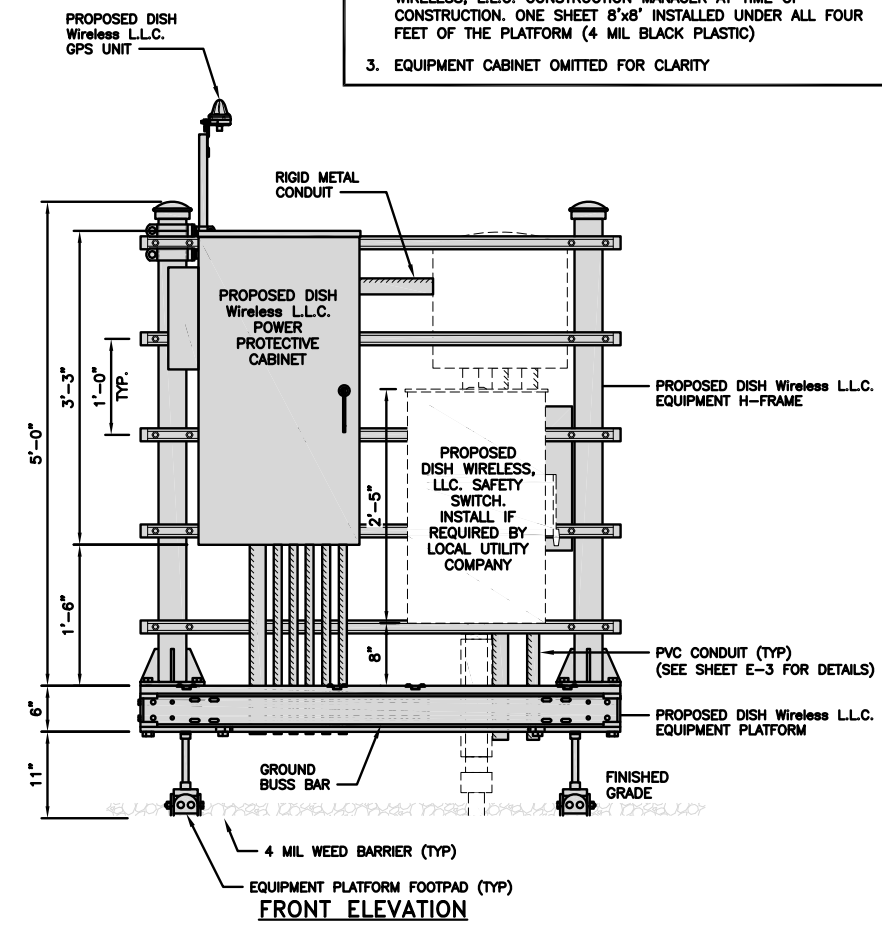


NOT USED

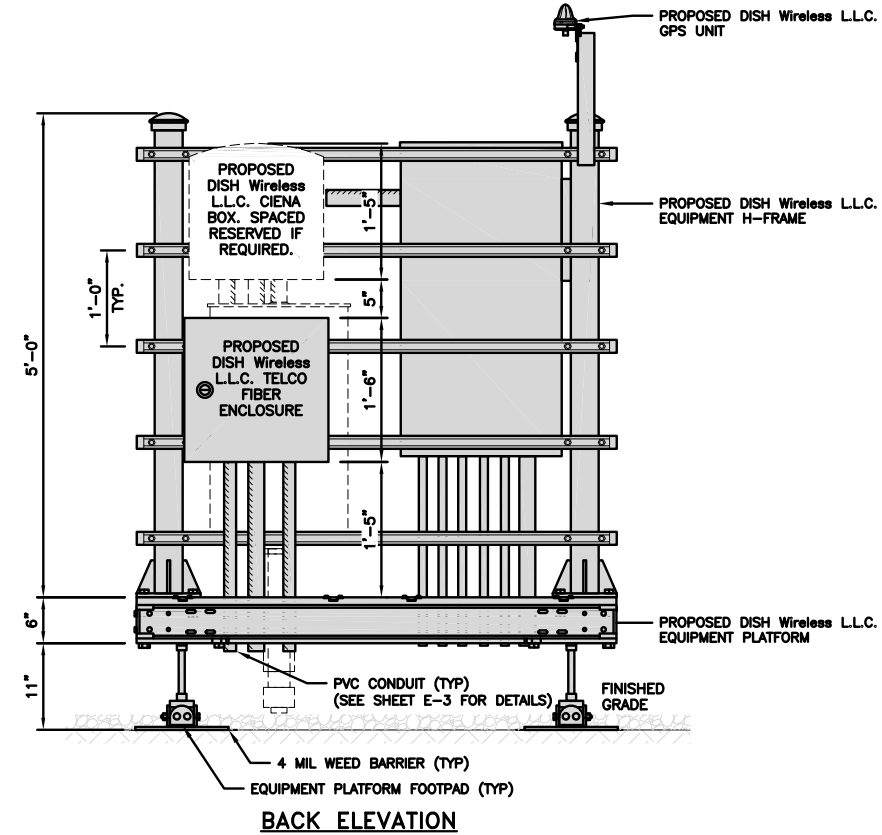
NO SCALE 4

NOTES

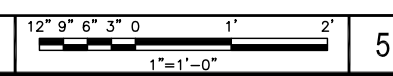
- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH WIRELESS, L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
- EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION



H-FRAME EQUIPMENT ELEVATION

NO SCALE 5



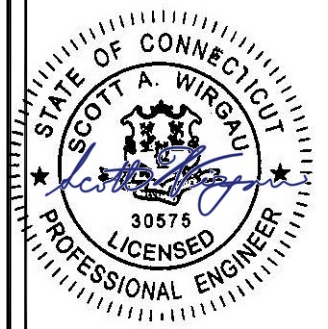
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



DRAWN BY:	CHECKED BY:	APPROVED BY:
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A&E PROJECT NUMBER  
207941-13729960\_D2

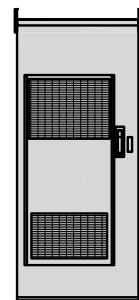
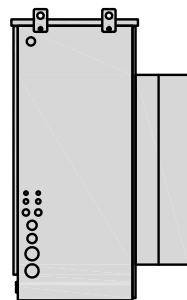
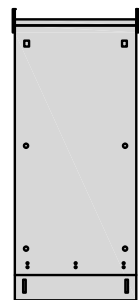
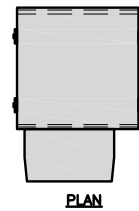
DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

SHEET NUMBER  
**A-3**



CHARLES INDUSTRY HEX CUBE-PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	-48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs



BACK

SIDE

FRONT

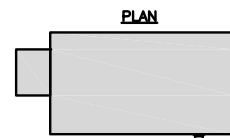
CABINET DETAIL

NO SCALE

1

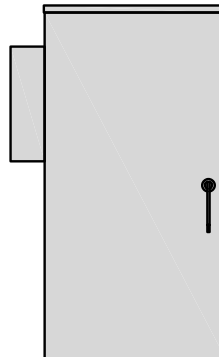
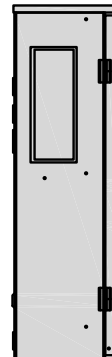
RAYCAP RDIAC-6512-P-240-MTS POWER & TELCO PROTECTION CABINET

DIMENSIONS (HxWxD)	40"x20"x10"
WEIGHT/ VOLUME	124 LBS
MANUAL TRANSFER SWITCH	200A
LOAD CENTER	30 POSITION
MAIN BREAKER	200A, 65KA AIC
GENERATOR RECEPTACLE	CAMLOCK
NEMA RATING	3R POWDER COATED ALUMINUM
SURGE PROTECTION DEVICE	UL 1449 4TH EDITION LISTED



SIDE

FRONT



POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

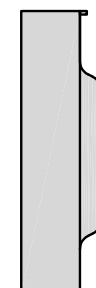
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SQUARE D SAFETY SWITCH D324NRB

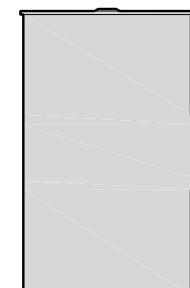
ENCLOSURE DIM (HxWxD)	29.25"x17.25"x8.25"
TOTAL WEIGHT (EMPTY)	45.33 LBS
MAX VOLTAGE/AMPS/WATT	240V/200A/48000W
ENCLOSURE RATING	OUTDOOR NEMA 3R



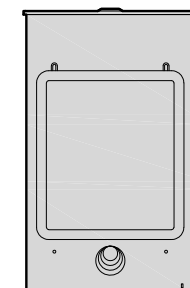
PLAN



SIDE



BACK



FRONT

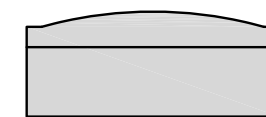
SAFETY SWITCH

NO SCALE

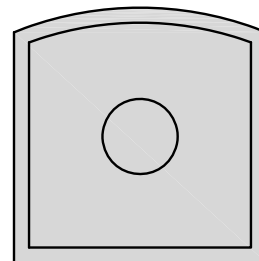
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CIENA 3931 SERVICE DELIVERY SWITCH

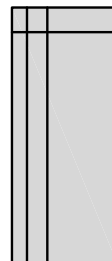
DIMENSIONS (HxWxD)	17.0"x16.8"x7.0" 431x427x178mm
WEIGHT	28.6 LBS/13.0 KG
POWER INPUT	60W MAX



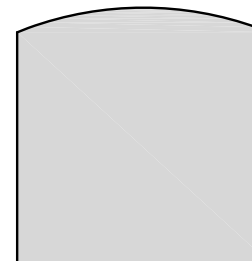
PLAN



FRONT



SIDE



BACK

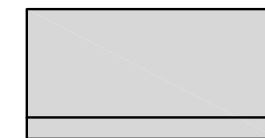
CIENA DETAIL

NO SCALE

5

CHARLES FIBER TELCO ENCLOSURE CUBE-MP1818WB-A

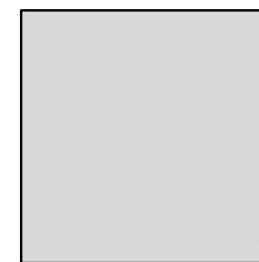
ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD



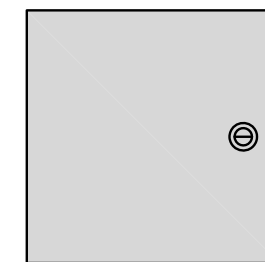
PLAN



SIDE



BACK



FRONT

FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6

NOT USED

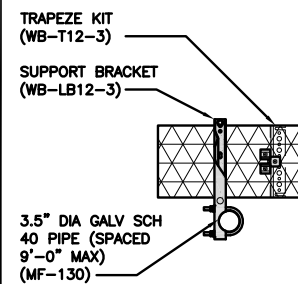
NO SCALE

4

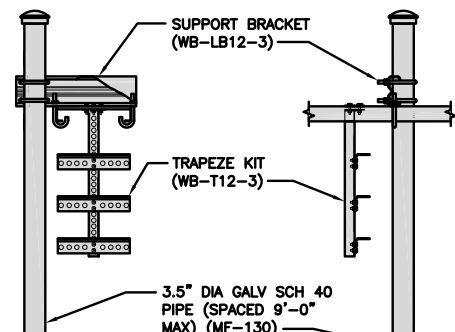
COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT

DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS
	WB-LB12-3 SUPPORT BRACKET
	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



PLAN



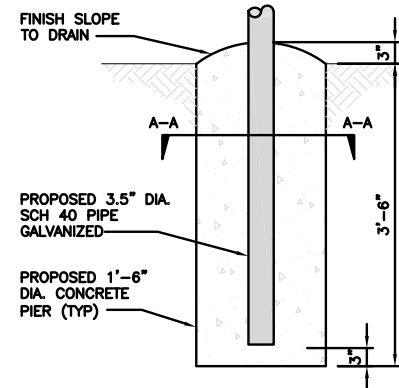
FRONT

SIDE

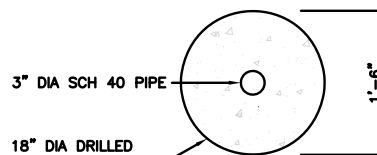
ICE BRIDGE DETAIL

NO SCALE

7



CONCRETE PIER

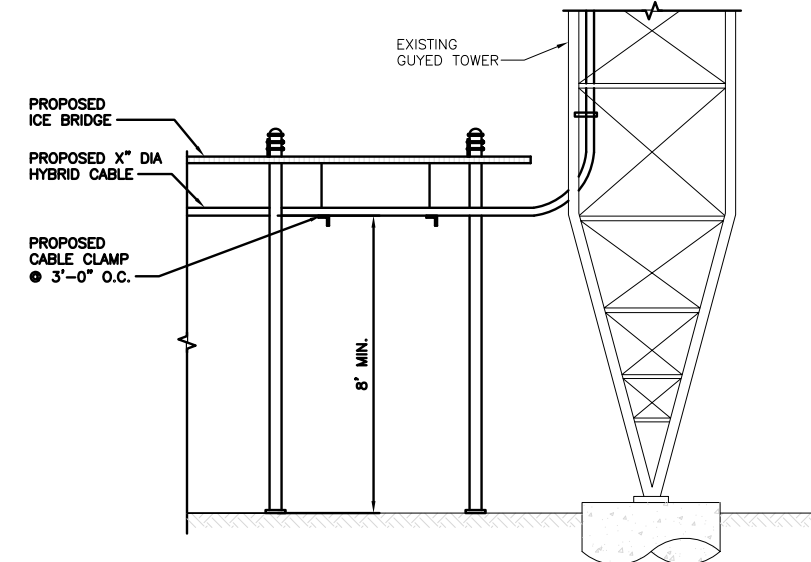


A-A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

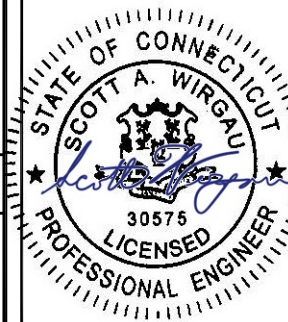


DRAWN BY: CHECKED BY: APPROVED BY:  
LR SRF SRF

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/23/2022	ISSUED FOR CONSTRUCTION
1	04/25/2022	REVISED OSP / FIBER MMP



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207941-13729960\_D2

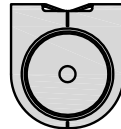
DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
EQUIPMENT DETAILS

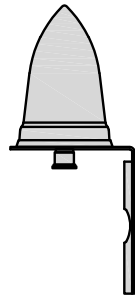
SHEET NUMBER

A-4

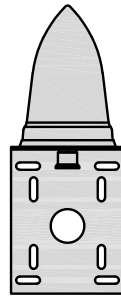
<b>PCTEL GPSGL-TMG-SPI-40NCB</b>	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



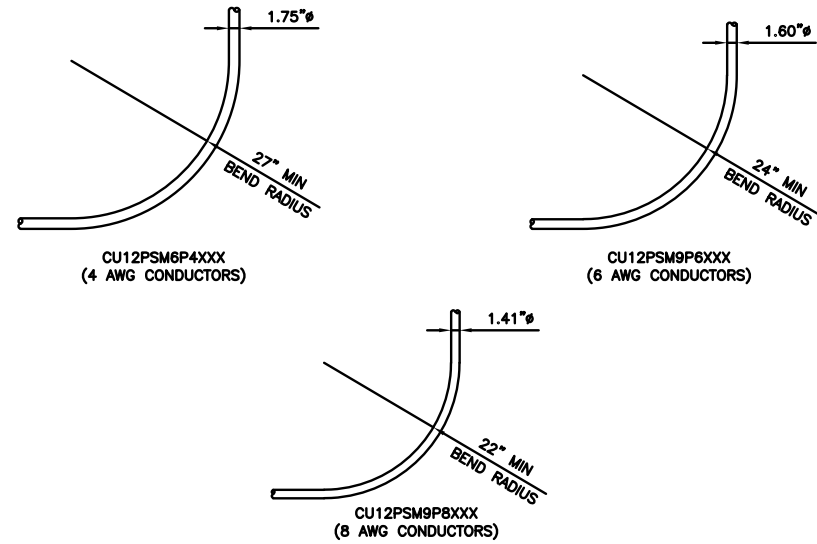
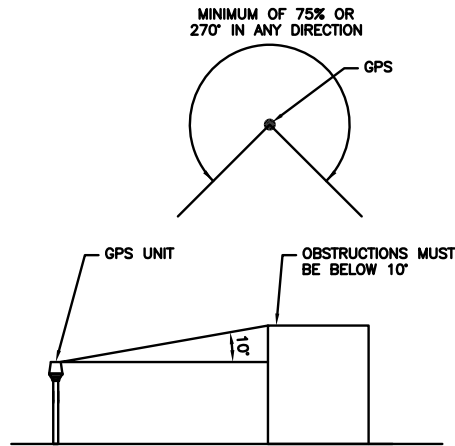
TOP



BACK



SIDE



GPS DETAIL

NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2

CABLES UNLIMITED HYBRID CABLE  
MINIMUM BEND RADIUSES

NO SCALE

3

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

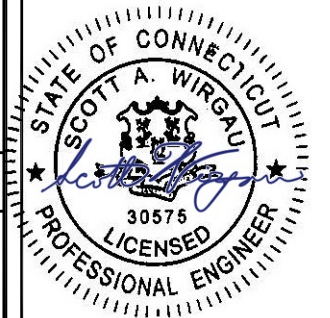
**AMERICAN TOWER**  
A.T. ENGINEERING SERVICE, PLLC  
3500 REGENCY PARKWAY  
SUITE 100  
CARY, NC 27518  
PHONE: (919) 468-0112  
COA: PEC.0001553

DRAWN BY: CHECKED BY: APPROVED BY:  
LR SRF SRF

RFDS REV #: ----

**CONSTRUCTION  
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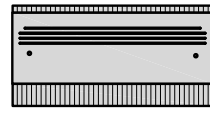
A&E PROJECT NUMBER  
207941-13729960\_D2

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

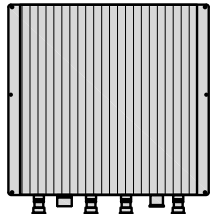
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
**A-5**

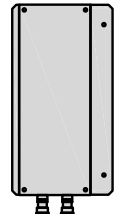
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



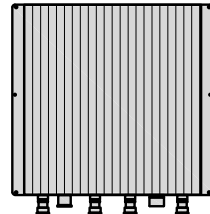
PLAN



BACK



SIDE



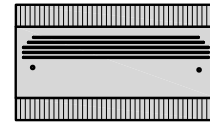
FRONT

RRH DETAIL

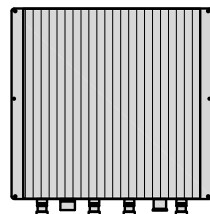
NO SCALE

1

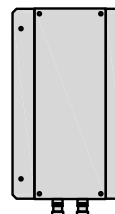
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



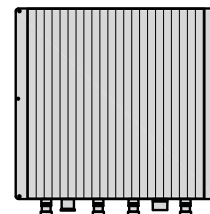
PLAN



BACK



SIDE



FRONT

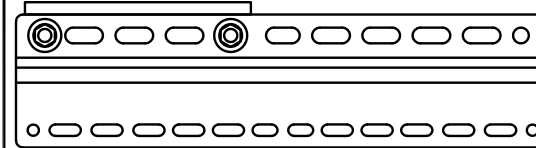
RRH DETAIL

NO SCALE

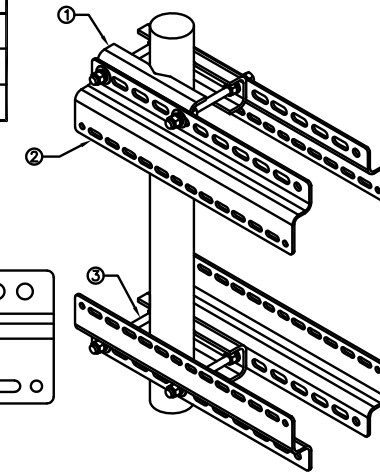
2

SABRE DOUBLE Z-BRACKET G10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT



RRH MOUNT DETAIL

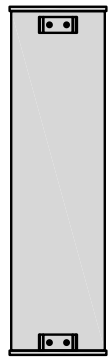
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3

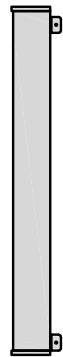
JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



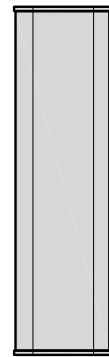
PLAN



BACK



SIDE



FRONT

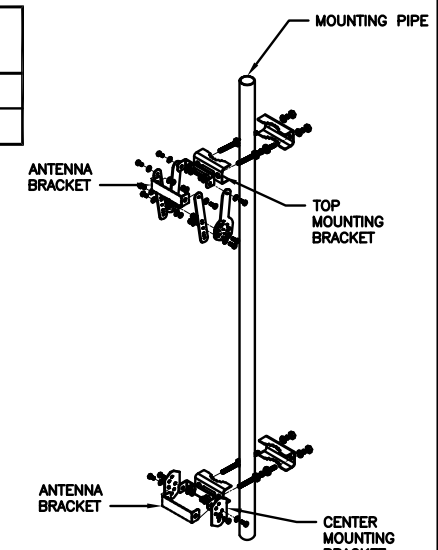
ANTENNA DETAIL

NO SCALE

4

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:  
KIT #91900318: TOP AND BOTTOM BRACKETS  
FOR 4-, 6-, AND 8-FOOT ANTENNAS  
ANTENNA BRACKET NOT PART OF KIT



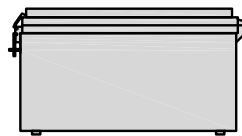
NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL

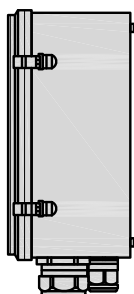
NO SCALE

6

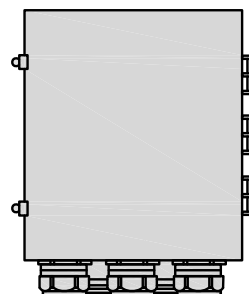
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



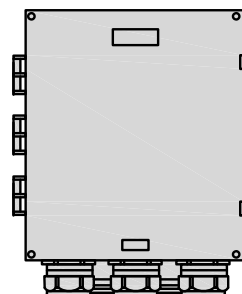
PLAN



SIDE



BACK



FRONT

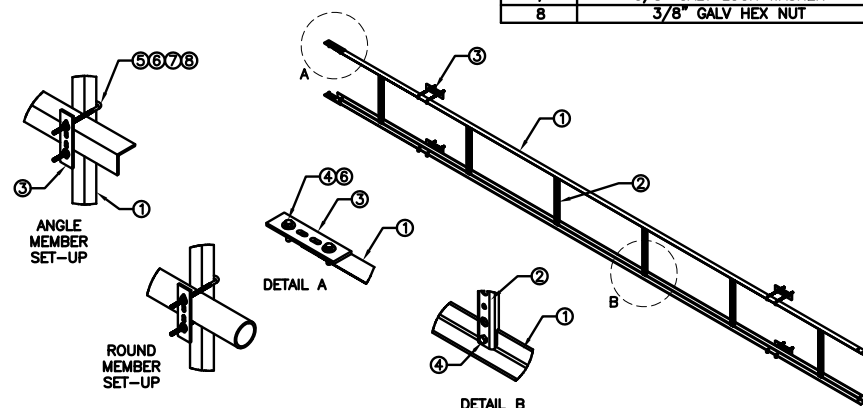
SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

COMMSCOPE 20' CABLE LADDER 6 HOLE RUNGS	
DIMENSIONS (WxL)	20.5"x240"
WEIGHT	84.94 lbs

ITEM#	DESCRIPTION
1	20" ANGLE SIDE RAIL
2	20" LADDER RUNG
3	BACKING PLATE
4	3/8"x1-1/2" GALV BOLT KIT
5	8" GALV J-BOLT KIT
6	3/8" GALV FLAT WASHER
7	3/8" GALV LOCK WASHER
8	3/8" GALV HEX NUT

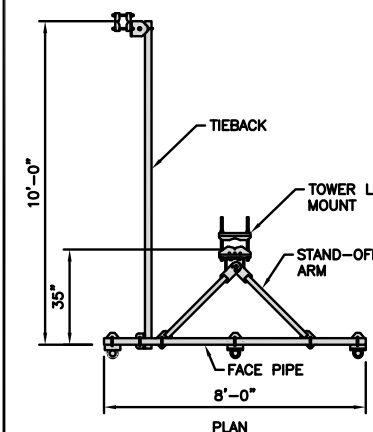


CABLE LADDER DETAIL

NO SCALE

8

COMMSCOPE V-FRAME MTG3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs



ANTENNA FRAME DETAIL

NO SCALE

9

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

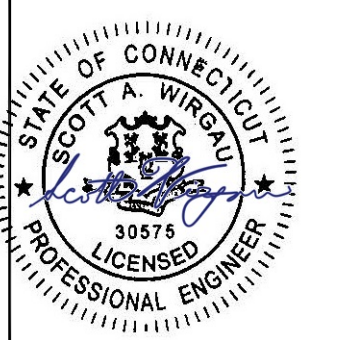
**AMERICAN TOWER**  
A.T. ENGINEERING SERVICE, PLLC  
3500 REGENCY PARKWAY  
SUITE 100  
CARY, NC 27518  
PHONE: (919) 468-0112  
COA: PEC.0001553

DRAWN BY: CHECKED BY: APPROVED BY:  
LR SRF SRF

RFDS REV #: ----

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PROJECT INFORMATION  
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164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
EQUIPMENT DETAILS

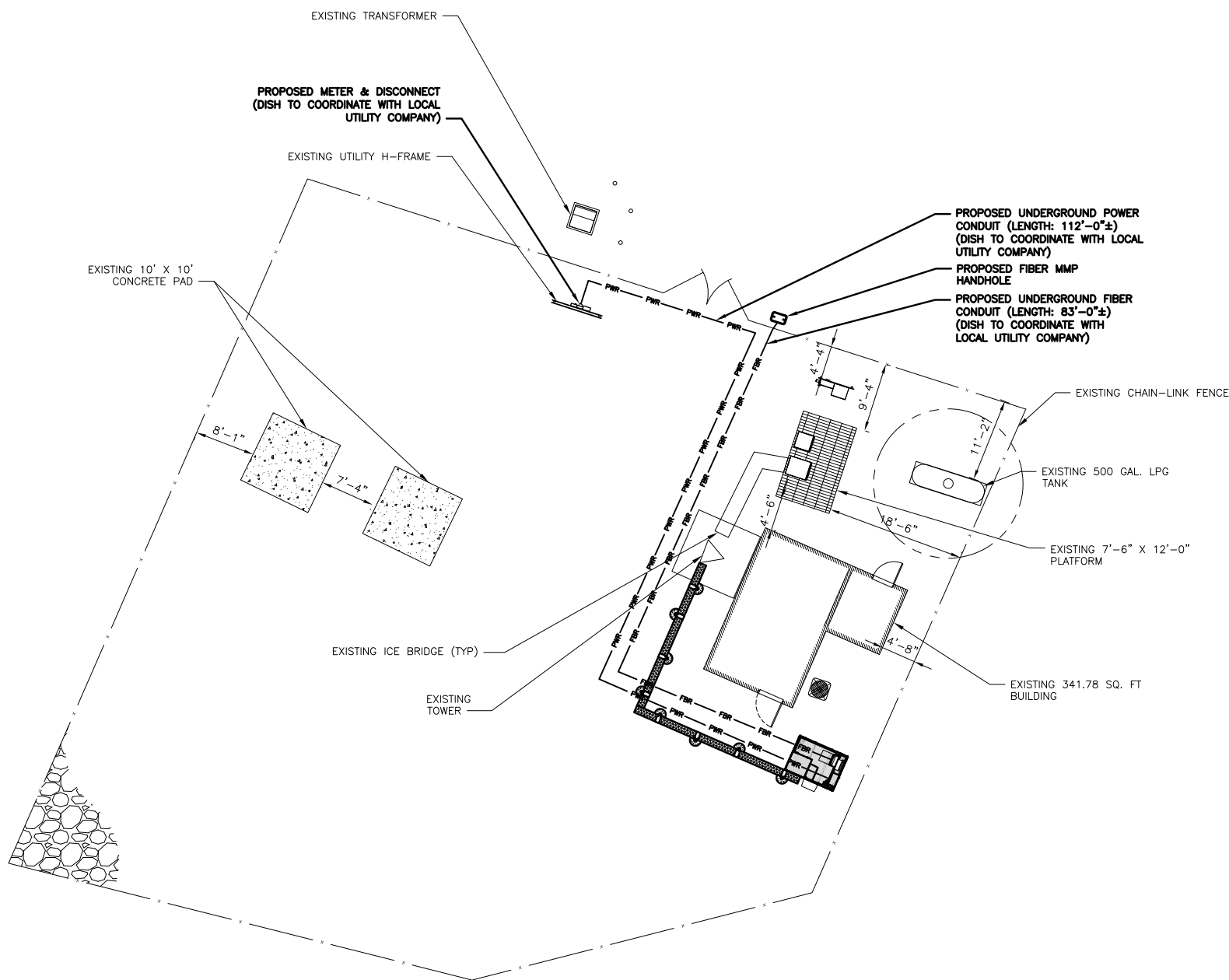
SHEET NUMBER  
**A-6**

**NOTES**

1. THE EASEMENT RIGHTS FOR THIS SITE DO NOT INCLUDE A SPECIFIED AREA FOR THE LOCATION OF UTILITIES. CONSTRUCTION CONTRACTOR MUST FIELD VERIFY THE APPROPRIATENESS OF ALL PROPOSED UTILITY ROUTES
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

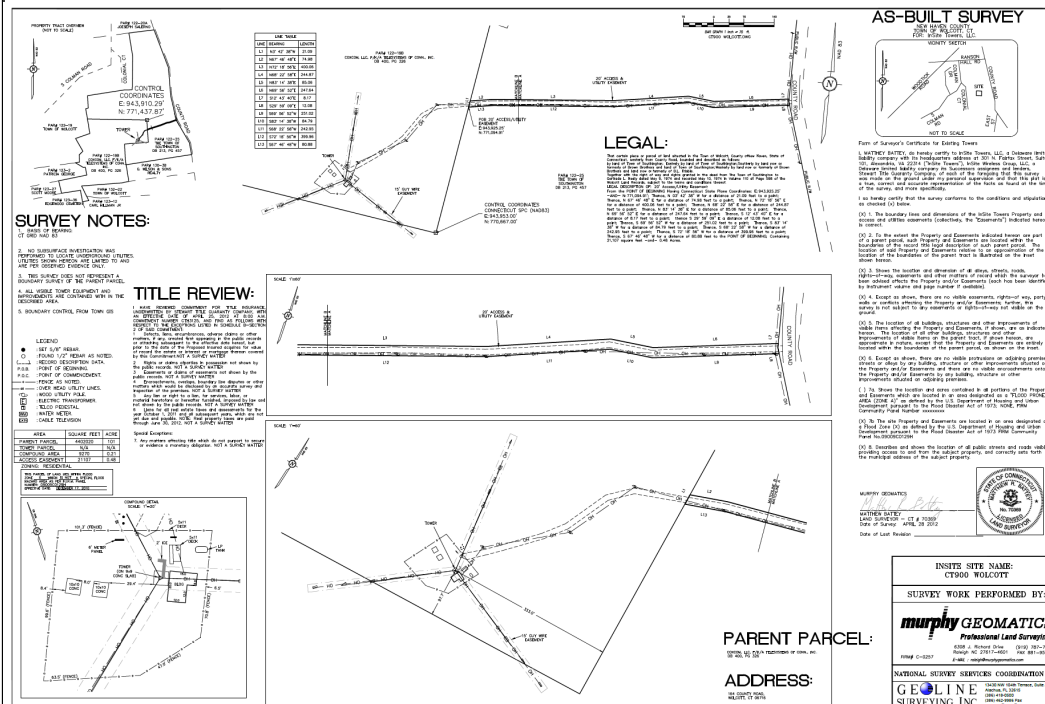
1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG



**ELECTRICAL NOTES**

NO SCALE

2

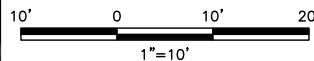


**EXISTING SURVEY (BY OTHERS)**

NO SCALE

3

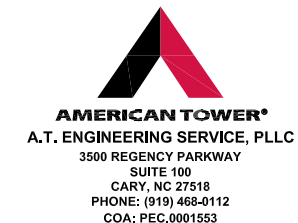
**UTILITY ROUTE PLAN**



1



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

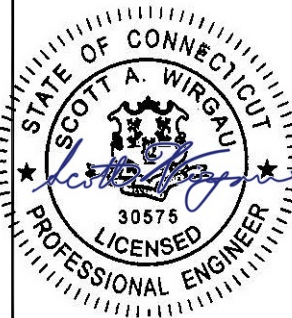


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RFDS REV #: ----

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A&E PROJECT NUMBER  
207941-13729960\_D2

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

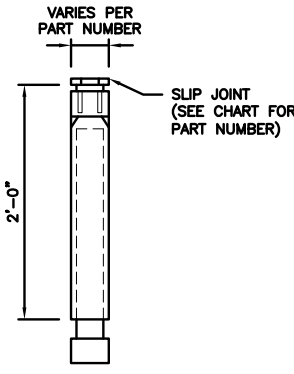
SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER

**E-1**

**CARLON EXPANSION FITTINGS**

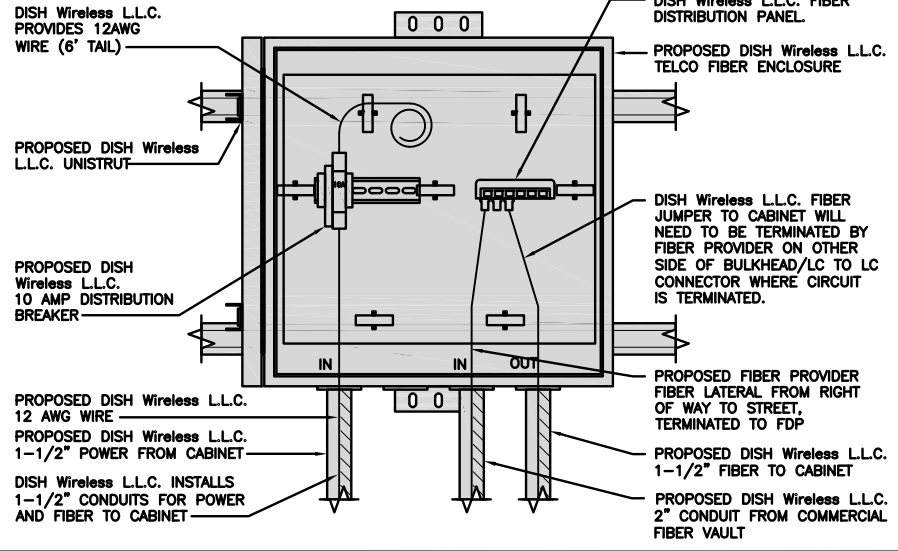
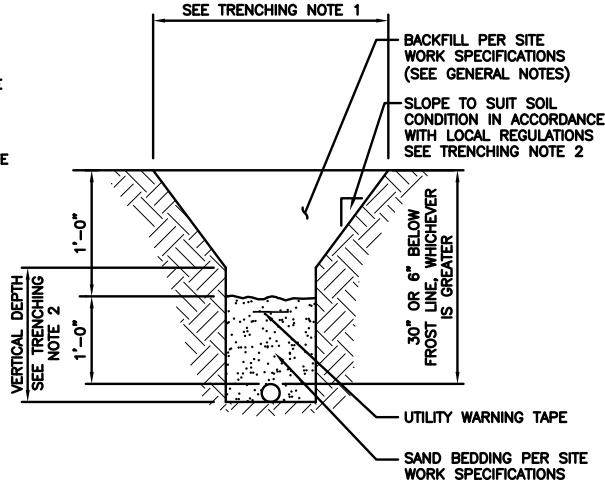
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"



NOTE: CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

**TRENCHING NOTES**

- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



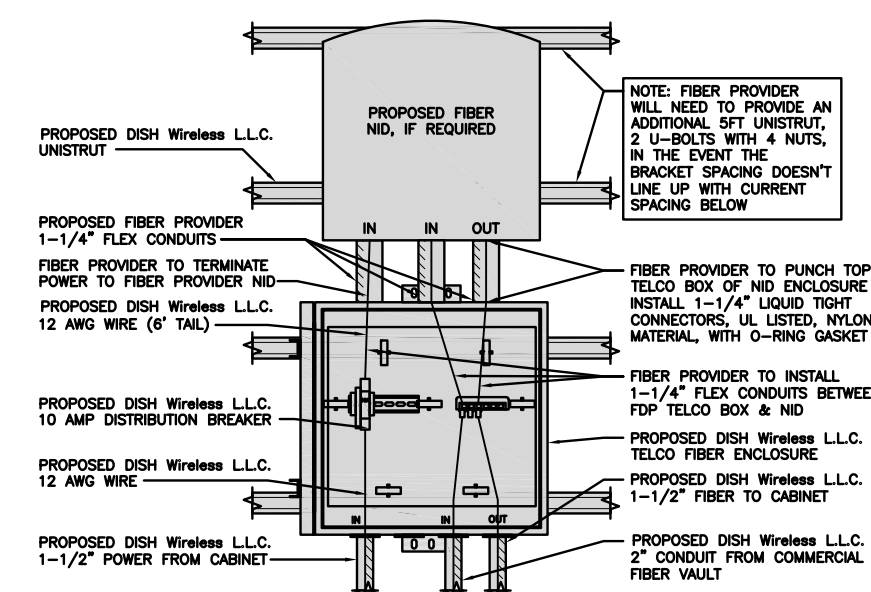
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



EXPANSION JOINT DETAIL NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL NO SCALE 2

DARK TELCO BOX – INTERIOR WIRING LAYOUT NO SCALE 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) NO SCALE 4

NOT USED NO SCALE 5

NOT USED NO SCALE 6

NOT USED NO SCALE 7

NOT USED NO SCALE 8

NOT USED NO SCALE 9

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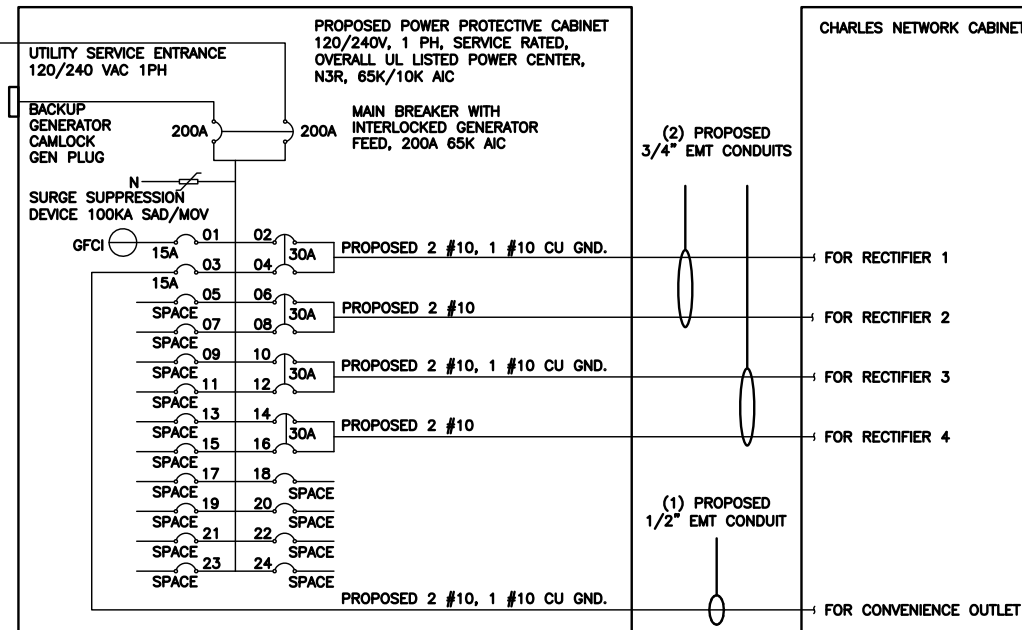
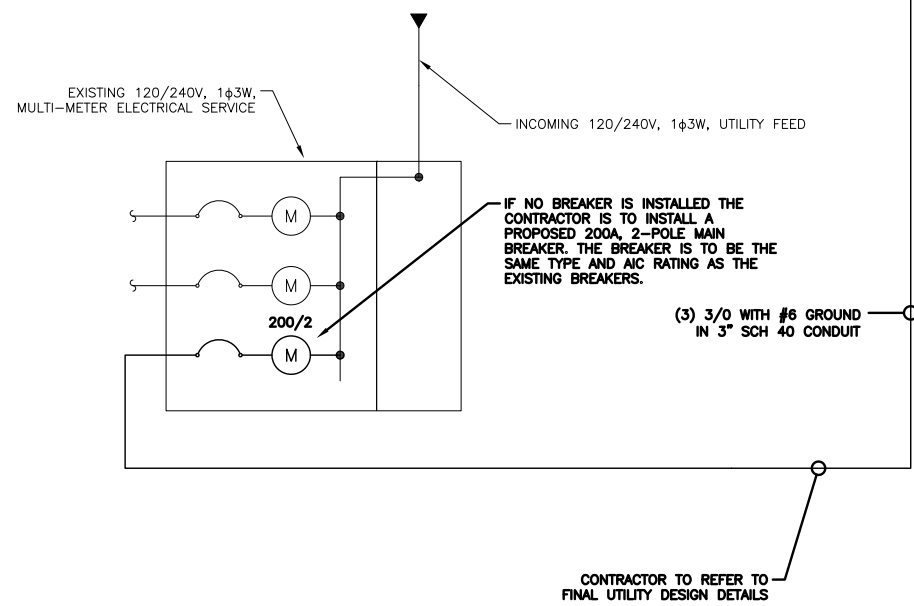
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PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
ELECTRICAL  
DETAILS

SHEET NUMBER  
**E-2**



**NOTE:**  
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

**BREAKERS REQUIRED:**  
(4) 30A, 2P BREAKER - SQUARE D P/N:Q0230  
(2) 15A, 1P BREAKER - SQUARE D P/N:Q0115

PPC ONE-LINE DIAGRAM

NO SCALE 1

PROPOSED CHARLES PANEL SCHEDULE										
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI OUTLET	180	180	15A	1	A	2	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
-SPACE-				5	A	6	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
-SPACE-				7	B	8	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
-SPACE-				9	A	10	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
-SPACE-				11	B	12	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
-SPACE-				13	A	14	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
-SPACE-				15	B	16	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS		180	180					11520	11520	
200A MCB, 1φ, 24 SPACE, 120/240V				L1	L2					
MB RATING: 65,000 AIC				11700	11700					
				98	98					
				98						
				123						

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3



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LITTLETON, CO 80120

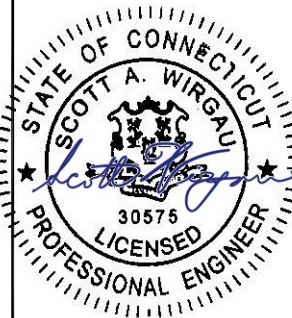


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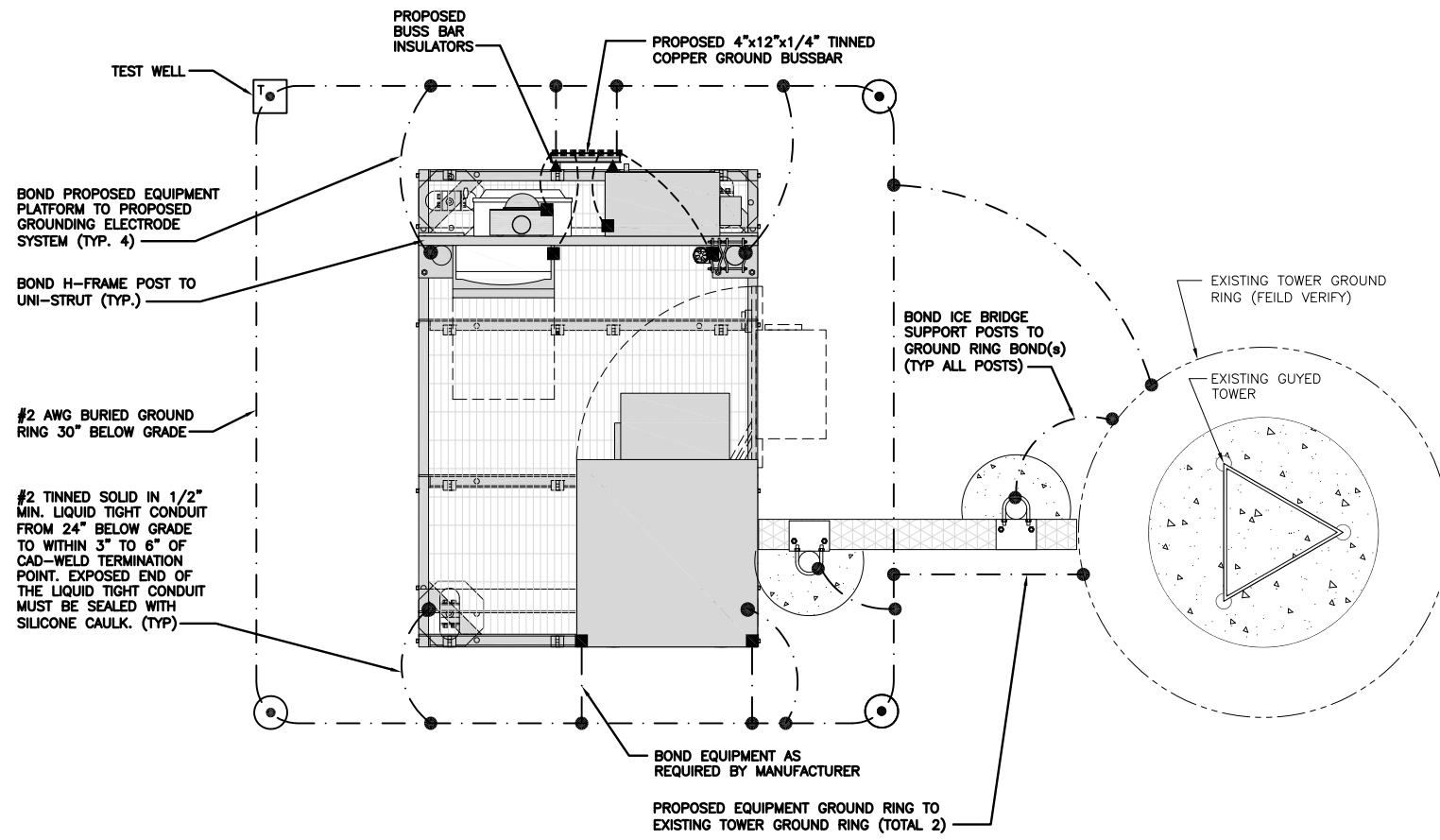
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PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
ELECTRICAL ONE-LINE, FAULT  
CALCS & PANEL SCHEDULE

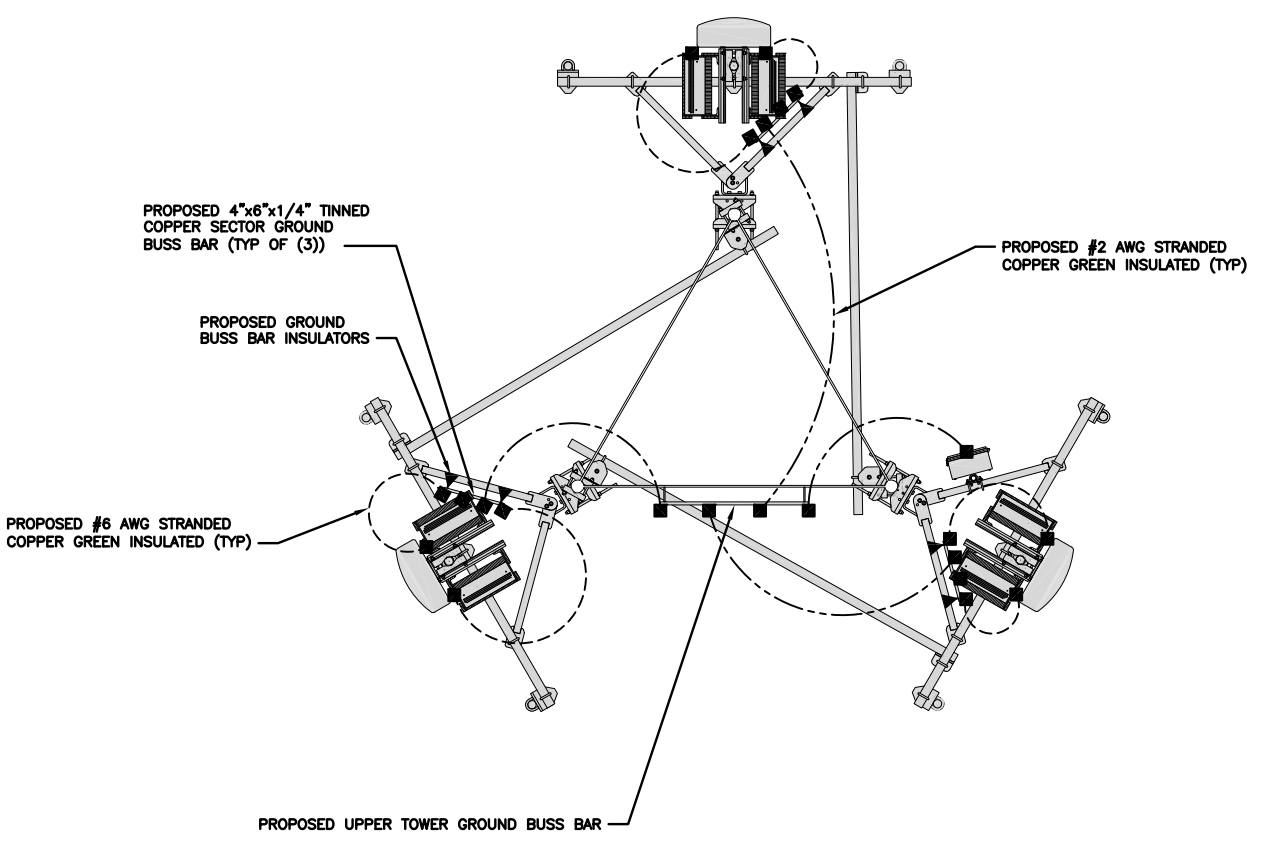
SHEET NUMBER

E-3



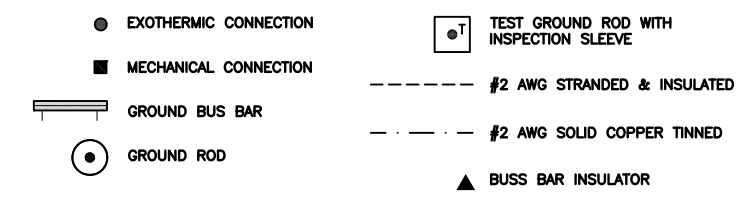
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
- ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

- (A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) GROUND ROD: UL LISTED COPPER CLAD STEEL MINIMUM 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (J) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (K) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (L) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- (M) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.
- (N) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE
- (P) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.
- (Q) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR
- (R) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH WIRELESS, L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



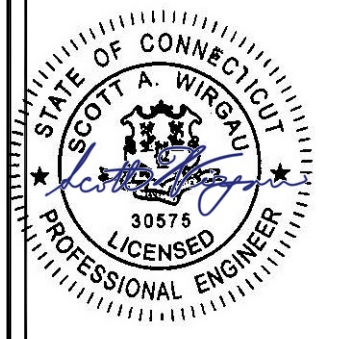
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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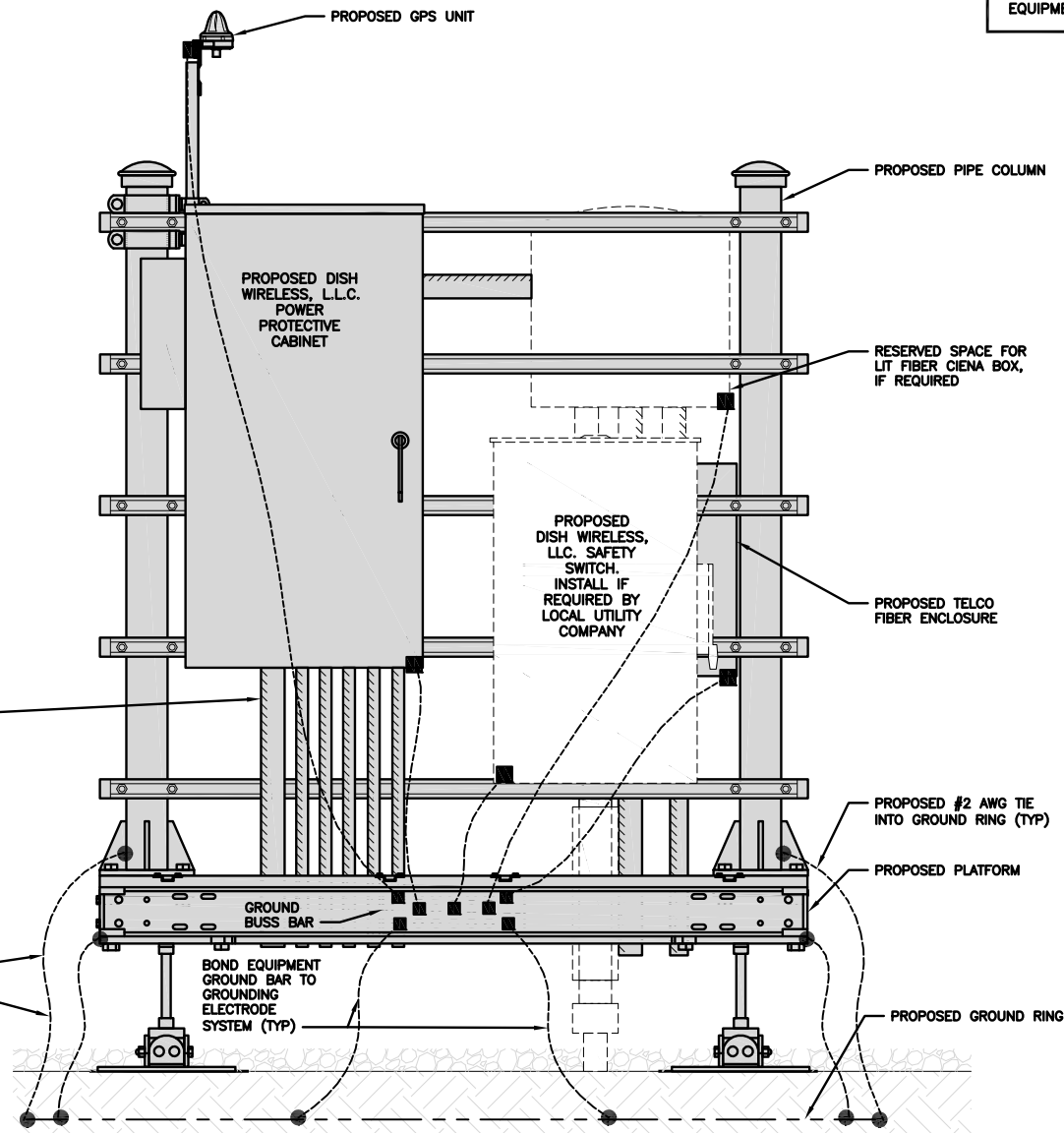
DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
GROUNDING PLANS  
AND NOTES

SHEET NUMBER  
**G-1**

**NOTES**

EQUIPMENT CABINET OMITTED FOR CLARITY

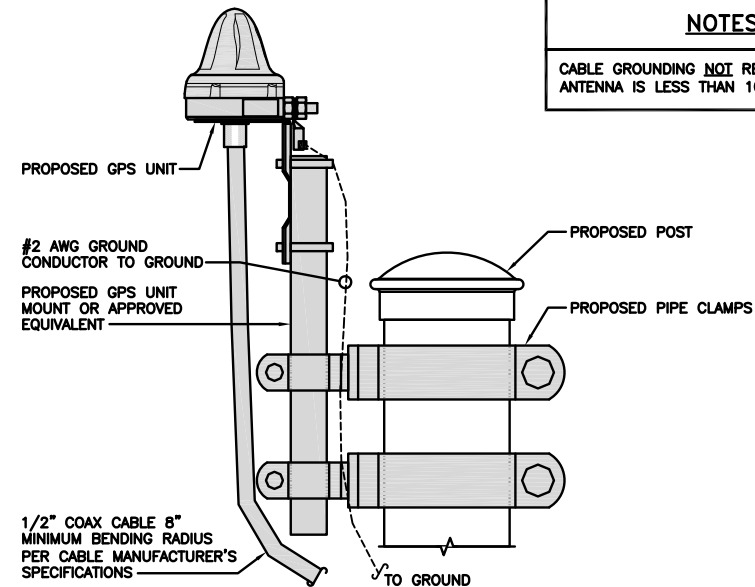


**H-FRAME GROUNDING DETAIL**

NO SCALE 1

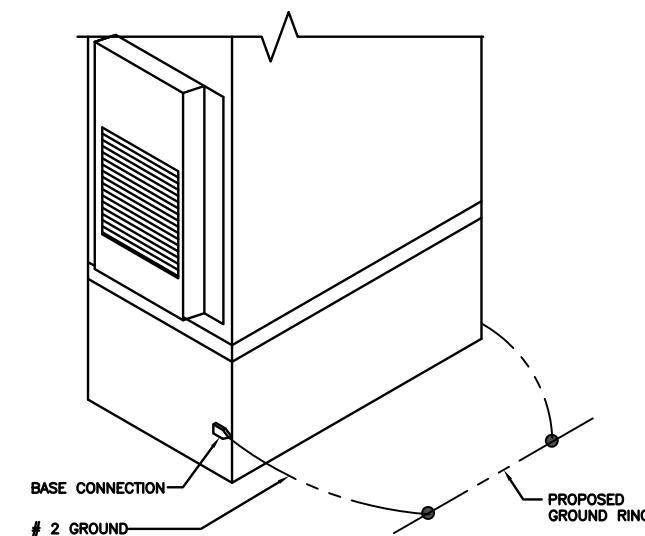
**NOTES**

CABLE GROUNDING **NOT** REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



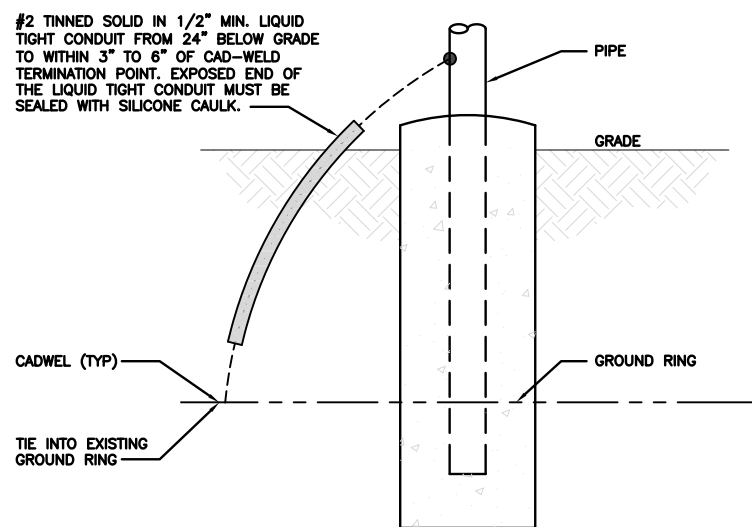
**TYPICAL GPS UNIT GROUNDING**

NO SCALE 2



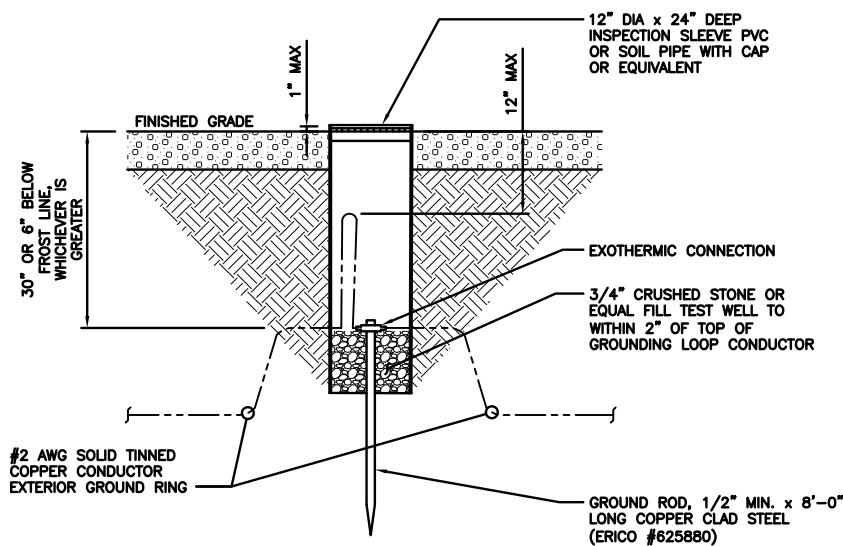
**OUTDOOR CABINET GROUNDING**

NO SCALE 3



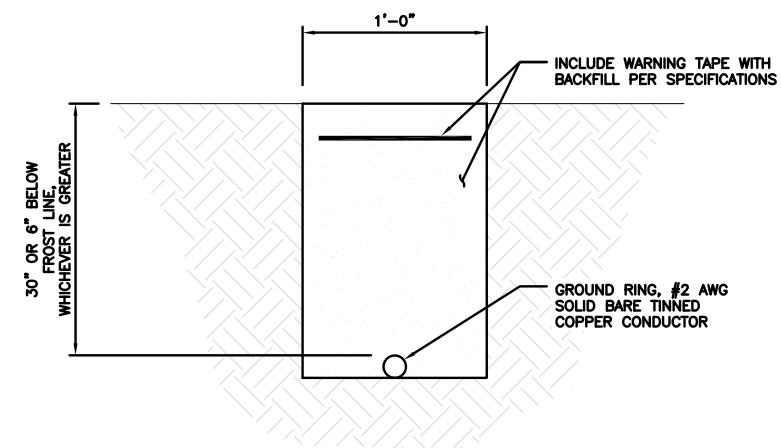
**TRANSITIONING GROUND DETAIL**

NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

NO SCALE 5



**TYPICAL GROUND RING TRENCH**

NO SCALE 6



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



**AMERICAN TOWER®**  
A.T. ENGINEERING SERVICE, PLLC  
3500 REGENCY PARKWAY  
SUITE 100  
CARY, NC 27518  
PHONE: (919) 468-0112  
COA: PEC.0001553

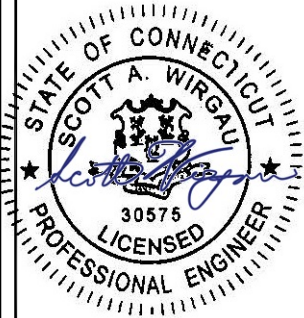
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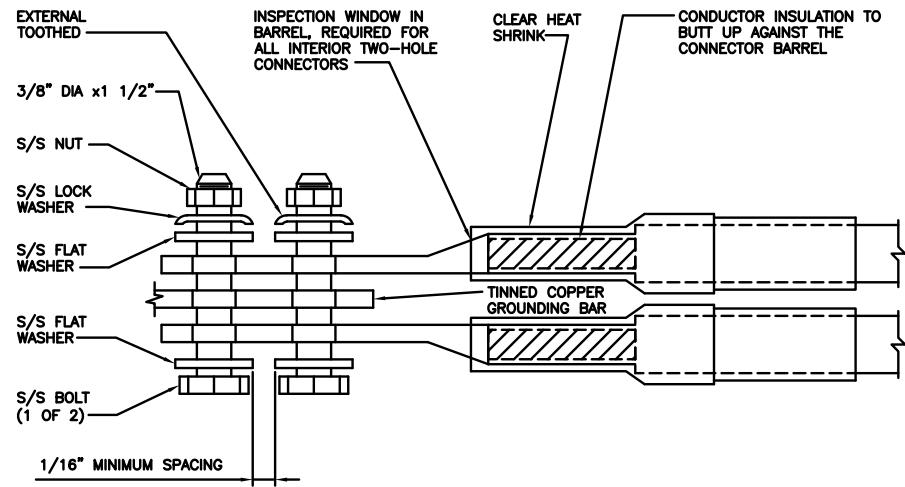
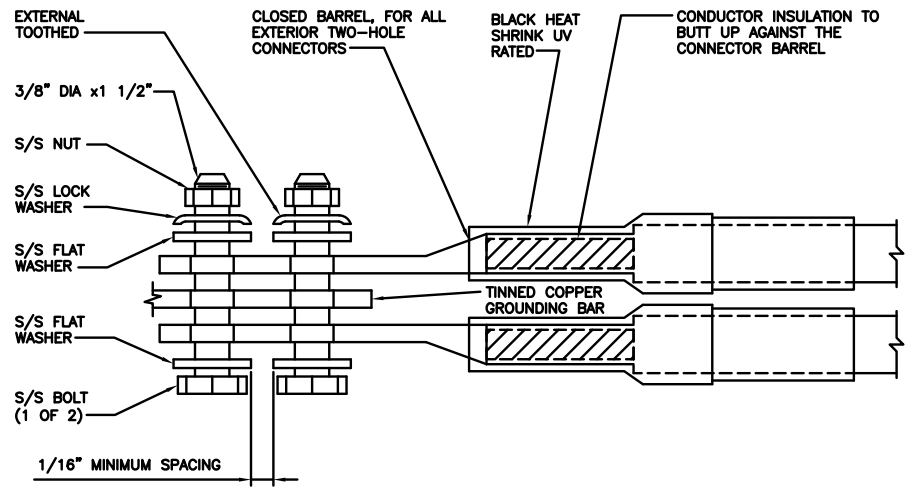
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SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-2**



1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).



TYPICAL GROUNDING NOTES

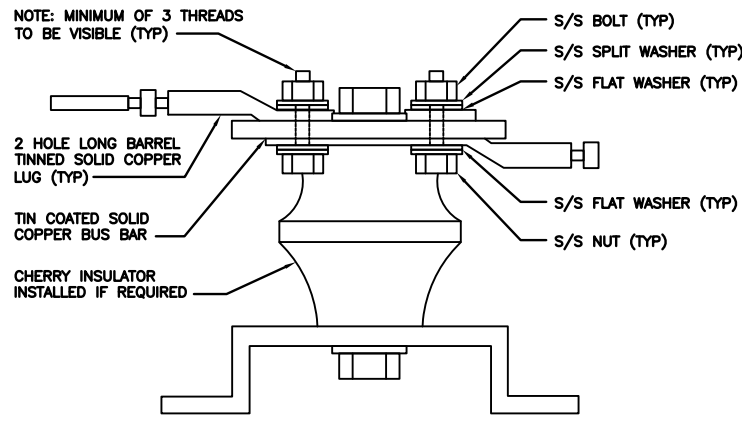
NO SCALE 1

TYPICAL EXTERIOR TWO HOLE LUG

NO SCALE 2

TYPICAL INTERIOR TWO HOLE LUG

NO SCALE 3



LUG DETAIL

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-3**

**RF JUMPER COLOR CODING**

3/4" TAPE WIDTHS WITH 3/4" SPACING

LOW-BAND RRH -  
(600MHz N71 BASEBAND) +  
(850MHz N26 BAND) +  
(700MHz N29 BAND) - OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BANDS)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH -  
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BANDS)

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

**HYBRID/DISCREET CABLES**

INCLUDE SECTOR BANDS BEING SUPPORTED  
ALONG WITH FREQUENCY BANDS

EXAMPLE 1 - HYBRID, OR DISCREET, SUPPORTS  
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS  
CBRS ONLY, ALL SECTORS

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	
ORANGE	YELLOW	ORANGE
PURPLE		PURPLE

**FIBER JUMPERS TO RRHs**

LOW-BAND RRH FIBER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**POWER CABLES TO RRHs**

LOW-BAND RRH POWER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**RET MOTORS AT ANTENNAS**

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**MICROWAVE RADIO LINKS**

LINKS WILL HAVE A 1.5-2 INCH WHITE WRAP WITH  
THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.  
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH  
ADDITIONAL MW RADIO.

MICROWAVE CABLES WILL REQUIRE P-TOUCH  
LABELS INSIDE THE CABINET TO IDENTIFY THE  
LOCAL AND REMOTE SITE ID'S

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	WHITE	GREEN	WHITE
WHITE	WHITE	WHITE	BLUE	WHITE	GREEN
	RED		WHITE		GREEN
	WHITE		WHITE		WHITE
	WHITE		WHITE		WHITE

**RF CABLE COLOR CODES**

NO SCALE

1

LOW BANDS (N71+N26)  
OPTIONAL - (N29)



CBRS TECH  
(3 GHz)



AWS  
(N66+N70+H-BLOCK)



NEGATIVE SLANT PORT  
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



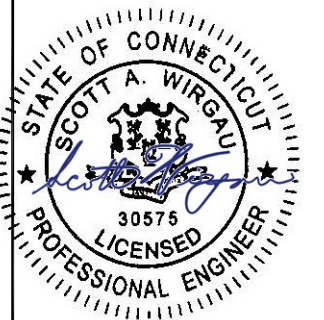
**AMERICAN TOWER\***  
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3500 REGENCY PARKWAY  
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CARY, NC 27518  
PHONE: (919) 468-0112  
COA: PEC.0001553

DRAWN BY: CHECKED BY: APPROVED BY:  
LR SRF SRF

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A&E PROJECT NUMBER  
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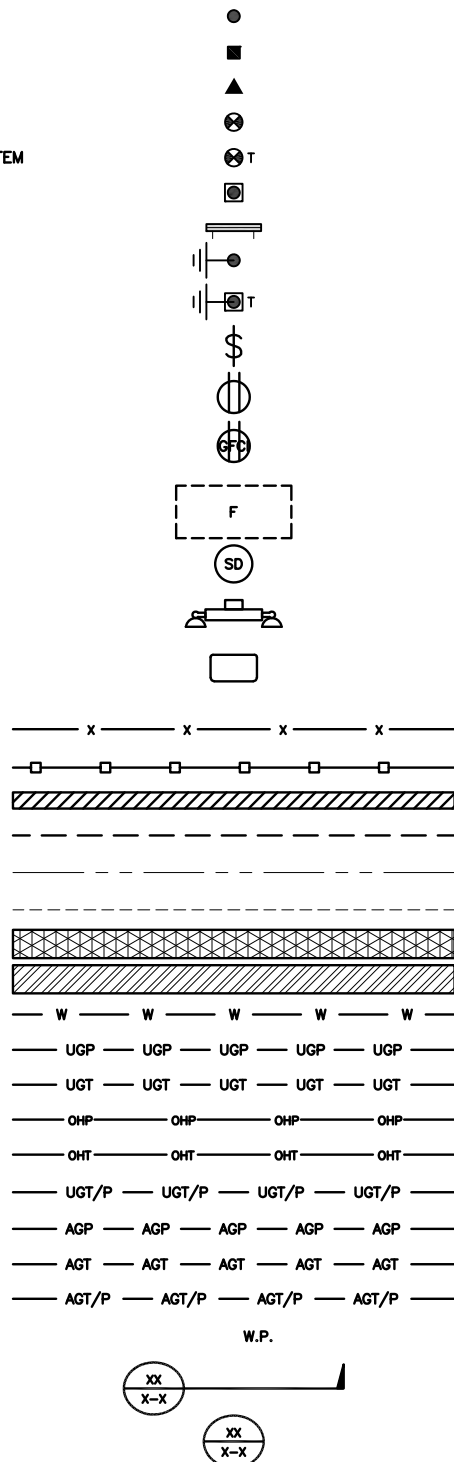
DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
RF  
CABLE COLOR CODES

SHEET NUMBER

**RF-1**

EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 BUSS BAR INSULATOR  
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 EXOTHERMIC WITH INSPECTION SLEEVE  
 GROUNDING BAR  
 GROUND ROD  
 TEST GROUND ROD WITH INSPECTION SLEEVE  
 SINGLE POLE SWITCH  
 DUPLEX RECEPTACLE  
 DUPLEX GFCI RECEPTACLE  
 FLUORESCENT LIGHTING FIXTURE  
 (2) TWO LAMPS 48-T8  
 SMOKE DETECTION (DC)  
 EMERGENCY LIGHTING (DC)  
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW  
 LED-1-25A400/51K-SR4-120-PE-DEBTDX



SECTION REFERENCE  
 DETAIL REFERENCE

**LEGEND**

AB ANCHOR BOLT  
 ABV ABOVE  
 AC ALTERNATING CURRENT  
 ADDL ADDITIONAL  
 AFF ABOVE FINISHED FLOOR  
 AFG ABOVE FINISHED GRADE  
 AGL ABOVE GROUND LEVEL  
 AIC AMPERAGE INTERRUPTION CAPACITY  
 ALUM ALUMINUM  
 ALT ALTERNATE  
 ANT ANTENNA  
 APPROX APPROXIMATE  
 ARCH ARCHITECTURAL  
 ATS AUTOMATIC TRANSFER SWITCH  
 AWG AMERICAN WIRE GAUGE  
 BATT BATTERY  
 BLDG BUILDING  
 BLK BLOCK  
 BLKG BLOCKING  
 BM BEAM  
 BTC BARE TINNED COPPER CONDUCTOR  
 BOF BOTTOM OF FOOTING  
 CAB CABINET  
 CANT CANTILEVERED  
 CHG CHARGING  
 CLG CEILING  
 CLR CLEAR  
 COL COLUMN  
 COMM COMMON  
 CONC CONCRETE  
 CONSTR CONSTRUCTION  
 DBL DOUBLE  
 DC DIRECT CURRENT  
 DEPT DEPARTMENT  
 DF DOUGLAS FIR  
 DIA DIAMETER  
 DIAG DIAGONAL  
 DIM DIMENSION  
 DWG DRAWING  
 DWL DOWEL  
 EA EACH  
 EC ELECTRICAL CONDUCTOR  
 EL ELEVATION  
 ELEC ELECTRICAL  
 EMT ELECTRICAL METALLIC TUBING  
 ENG ENGINEER  
 EQ EQUAL  
 EXP EXPANSION  
 EXT EXTERIOR  
 EW EACH WAY  
 FAB FABRICATION  
 FF FINISH FLOOR  
 FG FINISH GRADE  
 FIF FACILITY INTERFACE FRAME  
 FIN FINISH(ED)  
 FLR FLOOR  
 FDN FOUNDATION  
 FOC FACE OF CONCRETE  
 FOM FACE OF MASONRY  
 FOS FACE OF STUD  
 FOW FACE OF WALL  
 FS FINISH SURFACE  
 FT FOOT  
 FTG FOOTING  
 GA GAUGE  
 GEN GENERATOR  
 GFCI GROUND FAULT CIRCUIT INTERRUPTER  
 GLB GLUE LAMINATED BEAM  
 GLV GALVANIZED  
 GPS GLOBAL POSITIONING SYSTEM  
 GND GROUND  
 GSM GLOBAL SYSTEM FOR MOBILE  
 HDG HOT DIPPED GALVANIZED  
 HDR HEADER  
 HGR HANGER  
 HVAC HEAT/VENTILATION/AIR CONDITIONING  
 HT HEIGHT  
 IGR INTERIOR GROUND RING

IN INCH  
 INT INTERIOR  
 LB(S) POUND(S)  
 LF LINEAR FEET  
 LTE LONG TERM EVOLUTION  
 MAS MASONRY  
 MAX MAXIMUM  
 MB MACHINE BOLT  
 MECH MECHANICAL  
 MFR MANUFACTURER  
 MGB MASTER GROUND BAR  
 MIN MINIMUM  
 MISC MISCELLANEOUS  
 MTL METAL  
 MTS MANUAL TRANSFER SWITCH  
 MW MICROWAVE  
 NEC NATIONAL ELECTRIC CODE  
 NM NEWTON METERS  
 NO. NUMBER  
 # NUMBER  
 NTS NOT TO SCALE  
 OC ON-CENTER  
 OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION  
 OPNG OPENING  
 P/C PRECAST CONCRETE  
 PCS PERSONAL COMMUNICATION SERVICES  
 PCU PRIMARY CONTROL UNIT  
 PRC PRIMARY RADIO CABINET  
 PP POLARIZING PRESERVING  
 PSF POUNDS PER SQUARE FOOT  
 PSI POUNDS PER SQUARE INCH  
 PT PRESSURE TREATED  
 PWR POWER CABINET  
 QTY QUANTITY  
 RAD RADIUS  
 RECT RECTIFIER  
 REF REFERENCE  
 REINF REINFORCEMENT  
 REQ'D REQUIRED  
 RET REMOTE ELECTRIC TILT  
 RF RADIO FREQUENCY  
 RMC RIGID METALLIC CONDUIT  
 RRH REMOTE RADIO HEAD  
 RRU REMOTE RADIO UNIT  
 RWY RACEWAY  
 SCH SCHEDULE  
 SHT SHEET  
 SIAD SMART INTEGRATED ACCESS DEVICE  
 SIM SIMILAR  
 SPEC SPECIFICATION  
 SQ SQUARE  
 SS STAINLESS STEEL  
 STD STANDARD  
 STL STEEL  
 TEMP TEMPORARY  
 THK THICKNESS  
 TMA TOWER MOUNTED AMPLIFIER  
 TN TOE NAIL  
 TOA TOP OF ANTENNA  
 TOC TOP OF CURB  
 TOF TOP OF FOUNDATION  
 TOP TOP OF PLATE (PARAPET)  
 TOS TOP OF STEEL  
 TOW TOP OF WALL  
 TVSS TRANSIENT VOLTAGE SURGE SUPPRESSION  
 TYP TYPICAL  
 UG UNDERGROUND  
 UL UNDERWRITERS LABORATORY  
 UNO UNLESS NOTED OTHERWISE  
 UMTS UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM  
 UPS UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT)  
 VIF VERIFIED IN FIELD  
 W WIDE  
 W/ WITH  
 WD WOOD  
 WP WEATHERPROOF  
 WT WEIGHT

**ABBREVIATIONS**



5701 SOUTH SANTA FE DRIVE  
 LITTLETON, CO 80120

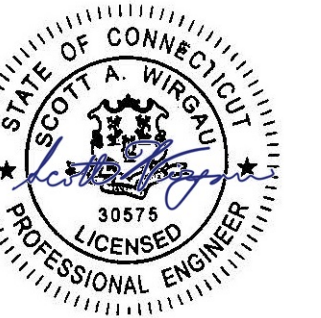


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RFDS REV #: - - - -

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A&E PROJECT NUMBER  
 207941-13729960\_D2

DISH WIRELESS, L.L.C.  
 PROJECT INFORMATION  
 BOHVN00036A  
 164 COUNTY ROAD  
 WOLCOTT, CT 06716

SHEET TITLE  
**LEGEND AND ABBREVIATIONS**

SHEET NUMBER

**GN-1**

**SITE ACTIVITY REQUIREMENTS:**

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS, L.L.C. AND TOWER OWNER NOC & THE DISH WIRELESS, L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH WIRELESS, L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:  
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS, L.L.C. AND DISH WIRELESS, L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS, L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS, L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS, L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

**GENERAL NOTES:**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
CARRIER: DISH WIRELESS, L.L.C.  
TOWER OWNER: TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS, L.L.C. AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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CARY, NC 27518  
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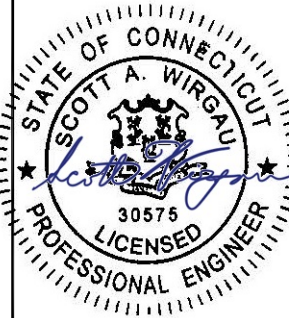
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LR SRF SRF

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DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-2**

**CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:**

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°F AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
  - #4 BARS AND SMALLER 40 ksi
  - #5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
  - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
  - CONCRETE EXPOSED TO EARTH OR WEATHER:
    - #6 BARS AND LARGER 2"
    - #5 BARS AND SMALLER 1-1/2"
  - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
    - SLAB AND WALLS 3/4"
    - BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

**ELECTRICAL INSTALLATION NOTES:**

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS, L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH WIRELESS, L.L.C."
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

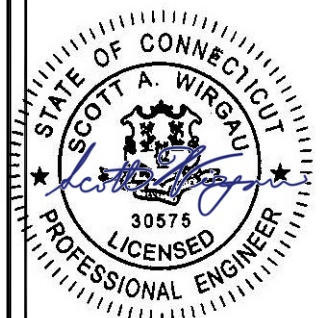


DRAWN BY:	CHECKED BY:	APPROVED BY:
LR	SRF	SRF

RFDS REV #: -----

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/23/2022	ISSUED FOR CONSTRUCTION
1	04/25/2022	REVISED OSP / FIBER MMP



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

A&E PROJECT NUMBER  
207941-13729960\_D2

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-3**

**GROUNDING NOTES:**

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

**STRUCTURAL STEEL NOTES:**

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
  - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
  - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
  - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
  - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
  - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
  - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
  - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
  - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
  - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
  - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
  - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
  - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
  - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
  - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH WIRELESS L.L.C. PROJECT MANAGER IN WRITING



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



**AMERICAN TOWER®**  
A.T. ENGINEERING SERVICE, PLLC  
3500 REGENCY PARKWAY  
SUITE 100  
CARY, NC 27518  
PHONE: (919) 468-0112  
COA: PEC.0001553

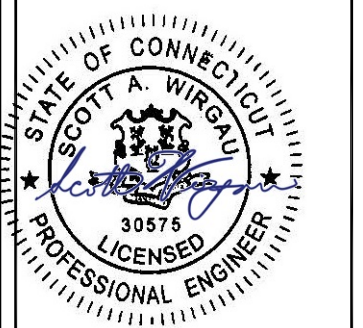
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LR SRF SRF

RFDS REV #: - - - -

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/23/2022	ISSUED FOR CONSTRUCTION
1	04/25/2022	REVISED OSP / FIBER MMP



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A&E PROJECT NUMBER  
207941-13729960\_D2

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00036A  
164 COUNTY ROAD  
WOLCOTT, CT 06716

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-4**



May 4, 2022

Blake Paynter  
Project Manager, Site Development  
American Tower Corporation  
10 Presidential Way  
Woburn, MA 01801

Re: Tower Share Application – Dish Site 13729960  
Dish Wireless Telecommunications Facility @ 164 County Road, Wolcott, CT 06716

Dear Mr. Paynter:

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing three hundred forty seven (347) foot tall guyed tower at 164 County Road, Wolcott, CT. (Latitude: 41.57621876, Longitude: -72.95606903) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by Insite Towers LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a two hundred twenty three (223) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 347-feet and no changes will be made to the compound dimensions.

This letter is intended to serve as the required notice to the tower owner. As required by Regulations of Connecticut State Agencies (“RCSA”) 16-50j-73 the Connecticut Siting Council (“CSC”) has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RCSA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish’s proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Acting Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a circular blue stamp or seal.

Jack Andrews  
Zoning Manager, Centerline Communications  
10130 Donleigh Drive  
Columbia, MD 21046



May 4, 2022

David Kalinowski, Zoning Enforcement Officer  
Town of Wolcott  
10 Kenea Ave.  
Wolcott, CT 06716

Re: Tower Share Application – Dish Site 13729960  
Dish Wireless Telecommunications Facility @ 164 County Road, Wolcott, CT 06716

Dear Mr. Kalinowski:

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing three hundred forty seven (347) foot tall guyed tower at 164 County Road, Wolcott, CT. (Latitude: 41.57621876, Longitude: -72.95606903) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by Insite Towers LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a two hundred twenty three (223) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 347-feet and no changes will be made to the compound dimensions.

I cannot locate the original tower approval. Most recently, the Council approved an exempt modification in case number EM-SPRINT-166-140627.

This letter is intended to serve as the required notice to the municipal planning agency. As required by Regulations of Connecticut State Agencies (“RCSA”) 16-50j-73 the Connecticut Siting Council (“CSC”) has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RCSA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish’s proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Acting Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a circular stamp or mark.

Jack Andrews  
Zoning Manager, Centerline Communications  
10130 Donleigh Drive  
Columbia, MD 21046





May 4, 2022

Insite Towers LLC  
301 N Fairfax St., Suite 101  
Alexandria, VA 22314

Re: Tower Share Application – Dish Site 13729960  
Dish Wireless Telecommunications Facility @ 164 County Road, Wolcott, CT 06716

Dear Property Owner:

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing three hundred forty seven (347) foot tall guyed tower at 164 County Road, Wolcott, CT. (Latitude: 41.57621876, Longitude: -72.95606903) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by Insite Towers LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a two hundred twenty three (223) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 347-feet and no changes will be made to the compound dimensions.

I cannot locate the original tower approval. Most recently, the Council approved an exempt modification in case number EM-SPRINT-166-140627.

This letter is intended to serve as the required notice to the property owner. As required by Regulations of Connecticut State Agencies (“RCSA”) 16-50j-73 the Connecticut Siting Council (“CSC”) has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RSCA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish’s proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Acting Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a circular blue stamp or seal.

Jack Andrews  
Zoning Manager, Centerline Communications  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144



May 4, 2022

The Honorable Thomas G. Dunn  
Town of Wolcott  
10 Kenea Ave.  
Wolcott, CT 06716

Re: Tower Share Application – Dish Site 13729960  
Dish Wireless Telecommunications Facility @ 164 County Road, Wolcott, CT 06716

Dear Mayor Dunn:

Dish Wireless (“Dish”) is proposing a wireless telecommunications facility on an existing three hundred forty seven (347) foot tall guyed tower at 164 County Road, Wolcott, CT. (Latitude: 41.57621876, Longitude: -72.95606903) and within the existing fenced compound. The tower is owned and operated by American Tower Corporation. The subject property is owned by Insite Towers LLC.

Dish proposes to install a five (5) foot by seven (7) foot metal platform within the existing fenced compound and install three (3) antennas, three (3) antenna mounts, six (6) RRUs, and cables on the existing tower at a two hundred twenty three (223) feet as more particularly detailed on the enclosed Construction Drawings. The overall height of the existing tower will remain at 347-feet and no changes will be made to the compound dimensions.

I cannot locate the original tower approval. Most recently, the Council approved an exempt modification in case number EM-SPRINT-166-140627.

This letter is intended to serve as the required notice to the municipality’s chief elected official. As required by Regulations of Connecticut State Agencies (“RCSA”) 16-50j-73 the Connecticut Siting Council (“CSC”) has been notified of this proposal and will review this application. Please accept this letter as notification pursuant to RCSA 16-50j-73.

The enclosed letter and attachments to the CSC fully describe Dish’s proposal for the site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachmann, Acting Executive Director of the CSC at 860-972-2935.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read 'Jack Andrews', is written over a printed name.

Jack Andrews  
Zoning Manager, Centerline Communications  
10130 Donleigh Drive  
Columbia, MD 21046

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**PRIORITY MAIL**  
**FLAT RATE ENVELOPE**  
**POSTAGE REQUIRED**

**PRESS FIRMLY TO SEAL**

**FROM:**  
John Andrews  
Zoning Manager  
1010 Donleigh Dr.  
Columbia, MD 21046

*FOR FILE*

**TO:**

Insite Towers LLC  
301 N Fairfax St., Suite 101  
Alexandria, VA 22314

**Retail**



**US POSTAGE PAID**

Origin: 21150  
05/04/22  
2384960572-02

**\$8.95**

**PRIORITY MAIL 1-DAY®**

0 Lb 7.50 Oz  
1006

**EXPECTED DELIVERY DAY: 05/05/22**

-R-T-S- 223143339-1N \*95 05/09/22

RETURN TO SENDER  
UNABLE TO FORWARD  
UNABLE TO FORWARD  
RETURN TO SENDER

C F S



erage.

**USPS TRACKING® #**



9505 5103 9196 2124 6257 11



Pickup,



USPS.COM/PICKUP

EP14F May 2020  
OD: 12 1/2 x 9 1/2

**PRESS FIRMLY**



- Expected delivery
  - Most domestic
  - USPS Tracking®
  - Limited international
  - When used in
- \*Insurance does not  
Domestic Mail Manual  
\*\* See International

**FLAT RATE**  
**ONE RATE ■ ANY**

**TRACKED**



PS00001000014

About 36,700,000 results (0.49 seconds)

**Track your package** ⋮  
Data provided by USPS

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Tracking number 9505510391962124625698

**Delivered** ✔️ **The Honorable Thomas G. Dunn - Mayor of Wolcott**  
May 06, 11:32AM  
Wolcott, CT

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[View details on USPS](#)

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[Call 1-800-275-8777](#)

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[Track another package](#)

<https://tools.usps.com> ⋮

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- How do I check a USPS tracking number? ▼
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Data provided by USPS

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Tracking number 9505510391962124625681

**Delivered** ✔️ **American Tower Corporation - Tower Operator/Owner**  
May 07, 11:48AM  
Woburn, MA

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[View details on USPS](#)

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[Call 1-800-275-8777](#)

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**Track your package** ⋮  
Data provided by USPS

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Tracking number 9505510391962124625704

**Delivered** ✔️

May 06, 11:32AM  
Wolcott, CT

**David Kalinowski - Wolcott Zoning Inspector**

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[Call 1-800-275-8777](#)

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